CATALOGUE "E."

NIAGARA

TRADE MARK.

NIAGARA MACHINE TOOL WORKS,

BUFFALO, N. Y., U. S. A.

CABLE ADDRESS,
"STAMPING."

1901

TINSMITH'S TOOLS
AND MACHINES.

SHEARS,
PUNCHES, ROLLS,
PRESSES, ETC.

TERMS.

Prices given in this catalog are standard list. Net Prices will be quoted upon inquiry, subject to change without notice.

Orders are filled with all possible despatch, but under no circumstances will we guarantee the time of delivery. When date of delivery is mentioned we will endeavor to complete the work as near the time as possible, but cannot assume the responsibility for any loss or inconvenience caused by overdue delivery or our inability to produce the work undertaken, nor can orders be cancelled without our consent.

Delivery.—We deliver to railroad or express company in this city in good order and condition, and are not responsible for any delays and damages caused in transportation. Boxing or crating will be charged for extra, at cost, unless arranged otherwise.

Terms of Payment.—Unless otherwise agreed, terms are net cash, 30 days from date of invoice, subject to sight draft with exchange on New York.

Claims must be brought to our notice within a reasonable time. We do not assume any obligations for unauthorized alterations on tools, machines and parts furnished by us.

Inquiries.—Prompt attention is given to all inquiries. In order to save time the requirements should be fully specified, and of special work samples or correct drawings should be sent.

Illustrations given in this catalogue are fair representations of the various machines and tools, but are not binding in detail. When a machine is made in more than one size, it occasionally happens that the different sizes vary in form and detail.

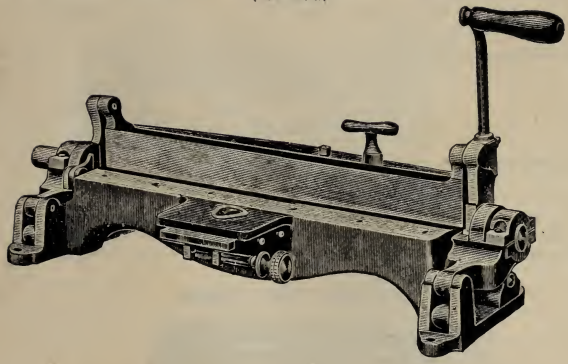
Weights are given approximately, to enable intending buyers to estimate the freight charges.

Special Machines.—Our standard machines can be modified more or less, and we have many other patterns beside those illustrated, which can be used to meet requirements out of the ordinary line.

ALL PREVIOUS QUOTATIONS ARE HEREBY REVOKED.

NIAGARA KEYSTONE BAR FOLDERS.

(Patented.)



These machines fold narrow and wide locks at various angles, form square joints and turn rounded edges ready to insert a wire. They form an edge of uniform width the entire length Intended for tin and light sheet metal up to No. 22 gauge.

The gauge is adjusted by means of the screw on the side of the extension, and its adjustment, in fractions of inches, is indicated on the graduated dial. This arrangement enables the operator to set the gauge quickly without measuring or trying.

When adjusted for round or wire edges, the folding blade remains flush with the gripping jaw until the operator begins to bend the edge. This permits of entering the work into the gripping jaw without difficulty.

The adjustment of the folding bar for round or open locks is accomplished quickly and with ease, by means of the socket wrench shown in cut. This wrench is used to raise and lower the wing or folding bar by means of a wedge operated by rack and pinion, and the same wrench is used to fasten the wedge securely by a screw.

The Folders leave the factory adjusted for IC and IX tin, or other sheet metal of the same thickness For thicker material the machine must be readjusted, for which provision is made.

The parts of our Bar Folders are made on the interchangeable plan, and duplicate parts can be furnished on short notice. When ordering, give number of the part wanted and of the machine.

60-inch KEYSTONE BAR FOLDER.—On this Folder the gripping jaw is made stationary to avoid the necessity of lifting the heavy weight in clamping; the frame carrying the folding blade moves downward. This Folder and the smaller sizes are suitable for round or wire edges, as well as sharp locks.

FOR PRICES, SEE PAGE 2.

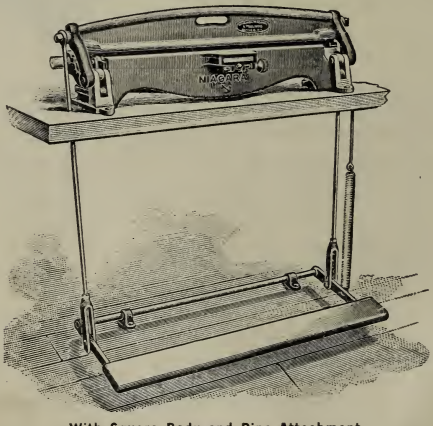
NIAGARA KEYSTONE BAR FOLDERS.

For Open and Close Locks	Code Word.	Shipping Weight.	Price.
17-inch Keystone Folder, for locks from $\frac{3}{32}$ to 1 inch, for tin	Rabais	100 lbs.	$25.00
21 " " " " " $\frac{3}{32}$ " 1 "	Rabalde	115 "	30.00
30 " " " " " $\frac{3}{32}$ " 1 "	Rabalva	220 "	40 00
36 " " " " " $\frac{3}{32}$ " 1 "	Rabato	250 "	60.00
42 " " " " " $\frac{1}{8}$ " 1 $\frac{5}{8}$ "	Rabbi	490 "	80.00
60 " " " " " $\frac{1}{8}$ " 2 "	Races	1100 "	200.00
Foot Treadle and Spring Attachments to 17, 20 and 30-inch Folder.....extra	Racines		12.00

30-inch and larger Folders have sockets for the handle at both ends of the machine.

Our Keystone Bar Folders, 17 to 30 inches, can be furnished with foot treadle for operating the folding bar and spring attachment, same as shown in cut on page 3.

KEYSTONE BAR FOLDER.

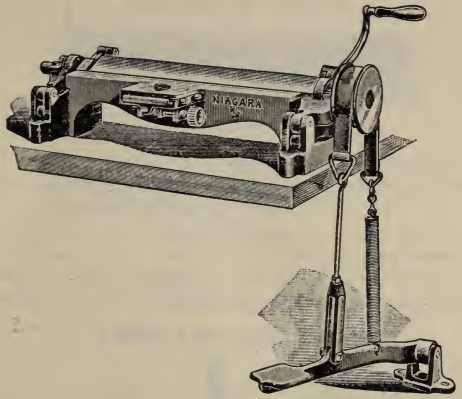


With Square Body and Pipe Attachment.

The attachment shown in the illustration makes the Bar Folder suitable for forming square and oblong can bodies, pipe, etc., with sharp or slightly rounded corners. When the Folder is to be used for the regular work, the operator can swing the attachment downward, after disconnecting the treadle rods.

	Code Word.	Shipping Weight.	Price.
20-inch Keystone Bar Folder, with Square Pipe Attachment,	Racily	148 lbs.	$40.00
30 " " " " " " " "	Racimo	270 "	50.00

EXCELSIOR BAR FOLDER.



Excelsior Bar Folder with Foot Treadle Attachment.

The "Excelsior" is substantially the same as the "Keystone," except that it is provided with the spring attachment for counterbalancing the bar, to facilitate the work, and with a device for rapid adjustment to varying thicknesses of material.

We have sold a large number of these Folders to lithographers and printers for mounting show cards, hangers, etc. After making the first bend, and inserting the edge of the hanger, the space between the bed and folding blade is enlarged for the second bend.

Adjustment of the Jaw for Different Thicknesses of Material.

There are two buttons in the frame upon which the set screws of the shoes rest. By turning the buttons in one or the other direction they raise and lower the shoes. The buttons are marked IC, XX, so that by turning the proper side up the clamp is adjusted for the thickness to be folded.

THE FOOT TREADLE ATTACHMENT for operating the folding bar can be added to the "Excelsior" as well as well as to the Keystone Folders, from 17 to 30 inches long. It facilitates and quickens the work.

FOR OPEN AND CLOSE LOCKS.	CODE WORD.	PRICE.
17-inch Excelsior Bar Folder, for locks from $\frac{3}{32}$ to 1 inch.....	Raclon	$31.00
20 " " " " " " "	Racóler	36.00
30 " " " " " " "	Racoma	46.00
36 " " " " " " "	Raconto	66.00
42 " " " " " " $\frac{1}{8}$ to 1$\frac{5}{8}$ inch..	Radarm	86.00
Foot Treadle Attachment, to 17, 20 and 30-in. Folders, extra,	Racines	7.50

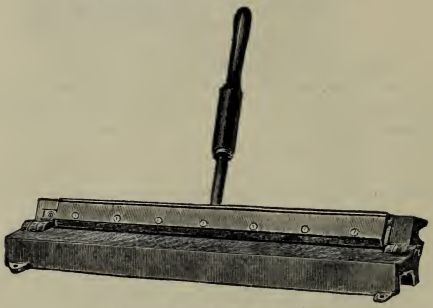
IRON BOTTOM FOLDER.

Capacity, No. 24 Iron and lighter.

For ordinary work. Width of locks from $\frac{3}{16}$ to $\frac{1}{2}$ inch.

	Code Word.	Shipping Weight.	Price.
30-inch Iron Bottom Sheet-Iron Folder.....	Radbod	65 lbs.	$ 7.00
39 " " " " "	Radgarn	82 "	12.00

IMPROVED SHEET-IRON FOLDER.

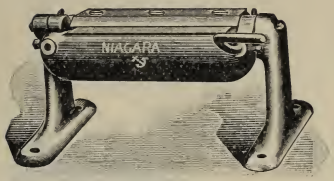


Capacity, No. 24 Iron and lighter.

This Folder is so constructed that the gauge always moves upon a line parallel with the edge of the folding plate. In place of the wooden handle we now furnish a steel handle. Width of locks from $\frac{3}{16}$ to $\frac{3}{8}$ inch.

	Code Word.	Shipping Weight.	Price.
30-inch Improved Sheet-Iron Folder.....	Radial	75 lbs.	$ 10.00
42 " " " "	Radicar	115 "	18.00
60 " " " "	Radier	280 "	25.00
72 " " " "	Radiola	415 "	50.00
96 " " " "			
with counterbalanced bar.....	Radreg	800 "	100.00

BODY BLANK FOLDERS.

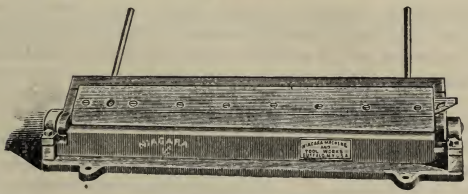


For Light Material.

Intended for folding the edges for the side seam of can bodies and similar work, when speed is essential. The Folders are compact and easy to operate. The gauge is adjustable from 1/8 to 3/8 inches.

	CODE WORD.	PRICE.
6-inch Body Blank Folder.....	Radreif	$6.00
12 " " " "	Radslot	9.00

No. 4 SHEET IRON FOLDER—Extra Heavy.



Capacity, No. 20 Iron and lighter.

These are accurate and strong machines. They have a gauge with parallel movement, adjustable to the widths mentioned below.

	CODE WORD.	SHIPPING WEIGHT.	PRICE.
No. 4, 30-in. Sheet Iron Folder, for locks from 1/4 to 1 in.,	Radules	190 lbs.	$30.00
No. 4, 42 " " " " " " 1/4 " 2 "	Radunt	350 "	50.00
No. 4, 48 " " " " " " 1/4 " 2 "	Rafael	400 "	60.00

NIAGARA ADJUSTABLE PIPE FOLDER.

Capacity, No. 24 Iron and lighter.

Tinsmiths who have used the ordinary Stove Pipe Folders have found that the same cannot be relied on to do accurate work, owing to variations in the hardness of the material. They will frequently turn uneven locks, and locks made with the same adjustment of the gauge will vary in width.

The accompanying cut shows a Pipe Folder which overcomes this difficulty. The edge of the sheet is inserted and clamped the same as in the well-known Wright's Folder. It is folded by swinging the bar and blade, between which the material is clamped, towards the operator, and while passing the upper edge of the frame the material is bent around the folding blade. To prevent the edge of the frame from being worn off, a steel rod is inserted to protect it. This rod can be renewed at a trifling expense.

The Niagara Adjustable Pipe Folder is sure to produce a lock of uniform width the entire length, as variations in the hardness of the material have no influence whatever. Furthermore, the Folder possesses the advantage of having an adjustable gauge for locks from $\frac{1}{16}$ to $\frac{3}{8}$ inch wide, and on sheets longer than the machine edges can be bent far enough over to be readily hammered down, similar to Fairchild's Folder.

	Code Word.	Shipping Weight.	Price.
Niagara Adjustable Pipe Folder, 30 inches.....	Rainulf	85 lbs.	$14.00
" " " " 42 "	Raixa	110 "	24.00

CAN BODY FOLDER, *self-clamping*, 18 in., for locks from $\frac{1}{4}$ to $\frac{5}{16}$ inch, No. 26 iron and lighter, 3-inch diameter and larger (Code Word, Rajas), $18.00

The edge is clamped automatically while being folded.

WRIGHT'S FOLDER.

Wright's Folder with Fairchild's Attachment.

This Folder is particularly intended for folding the edges of sheets already formed in cylindrical shape by means of rolls, and it will also fold straight sheets.

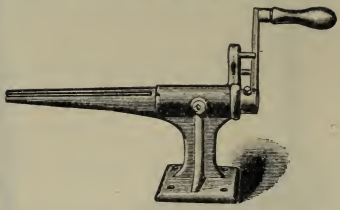
The **Fairchild's Attachment** gives the advantage that an edge can be turned on sheets of any length. For this purpose use the round rod, placing it so that the sheet will be put into the machine over it, and turn the folding bar against its round surface, making a slight bend the entire length of the sheet, and repeating the operation of bending until the lock is finished. On a long sheet, the edge can be turned only slightly more than a right angle, enough however, to to be readily hammered down.

To fold locks wider than the depth of the folding plate, use the steel strips under the plate to increase its width.

Wright's Folder, width of locks, $\frac{3}{16}$ to $\frac{5}{16}$ inch.
Fairchild's " " " $\frac{3}{16}$, $\frac{5}{16}$, $\frac{1}{2}$, $\frac{5}{8}$ inch.

	Code Word.	Shipping Weight.	Price.
30-inch Wright's Sheet-Iron Folder.....	Rafeo	80 lbs.	$12.00
42 " " " "	Rafle	105 "	20.00
62 " " " "	Rakel	180 "	50.00
30 " " Folder with Fairchild's Pat. Attachment,	Ralhos	85 "	15.00
42 " " " " " " "	Ragout	115 "	24.00
62 " " " " " " "	Raido	190 "	50.00

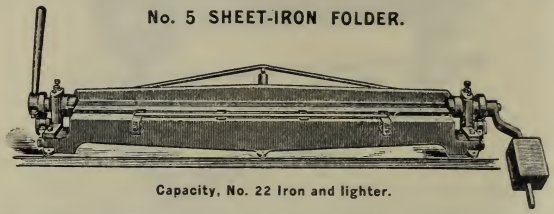
TAPER EDGING MACHINE.



Intended for folding the edges of cylindrical and conical work of small diameter.

6-inch Taper Edging Machine.....(Code Word, Raigas), $10.00

No. 5 SHEET-IRON FOLDER.



Capacity, No. 22 Iron and lighter.

The edge of the sheet is clamped by means of hand lever. The folding bar is counterbalanced to facilitate the work, and the design has been modified since above cut was made. The gauge is adjustable for locks from ¼ to 1 inch wide.

No. 5 Sheet-Iron Folder, 60 inches, Weight 500 lbs.....(Code Word, Rainbow), $75.00

CAN TOP FOLDING MACHINE.

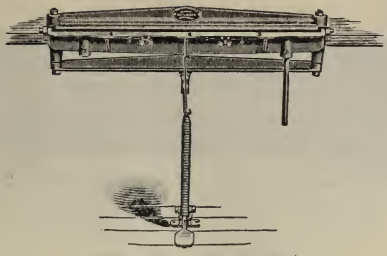
The open end of these Folders makes them suitable for edging blanks for oil can breasts, funnel bodies, drums, etc.

Nos. 1 and 2, length of blades 10 inches for tin.

No. 3, " " 13 " " No. 26 iron and lighter.

	Code Word.	Shipping Weight.	Price
No. 1. Can Top Folder for ¼ inch locks.....	Rainfall	25 lbs.	$ 8.00
No. 2. " " " 1/16 to ¼ inch locks...	Rameal	25 "	10.00
No. 3. " " " ⅛ to ⅜ " " ...	Ramify	65 "	15.00

OPEN THROAT FOLDING MACHINE.



For No. 24 Iron and lighter.

This Folder works on the principle of a Cornice Brake. It is not necessary to move the sheet while folding the edge and releasing the lock. The clamping bar is actuated by a foot treadle, and counterbalanced by a spring. An adjustable front gauge is provided for close locks from ¼ to 2 inches wide. The machine will also make bends at an angle of 50 degrees or more, any desired distance from either end of the sheet.

	Shipping Weight.	
Open Throat Folding Machine, 36 inches.....(Code Word, Ramiro),	210 lbs.	$20.00

BENCH SQUARE PIPE FORMER.

The Open Throat Folder, shown above, with a suitable clamping bar substituted for the regular one, is adapted to forming square pipe 3 inches and larger. Gauges are furnished to allow of making the bends without marking the sheet.

	Shipping Weight.	
Bench Square Pipe Former, 36 inches.....(Code Word, Ramist),	220 lbs.	$22.00

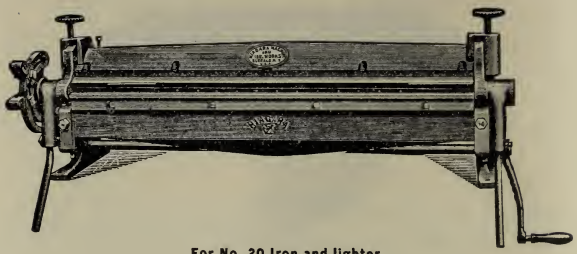
10-FOOT HAND FOLDER.

Capacity, No. 26 Iron and lighter.

This Folder is heavy and substantial. It is intended for bending close locks The folding bar is counterbalanced to facilitate the work, and the gauge is adjustable for locks from ¼ to 1 inch wide. Photograph will be sent on application.

10-foot Hand Folder, Weight about 1150 lbs.....(Code Word, Repajos), $125.00

NIAGARA UNIVERSAL FOLDER AND BRAKE.



For No. 20 Iron and lighter.

This machine combines the advantages of an ordinary Folder with those of a Cornice Brake.

CLAMPING BAR has a parallel motion up and down of 1 inch, and when in the lower position gives a firm grip upon the material. The two screws on top of the frames are used to fix the lower position of the clamping bar when more or less space is needed for the material or forming bars. The largest space obtainable between the clamping bar (when in the upper position) and the blade is 3 inches

THE SWINGING FOLDING BAR is adjustable up and down to permit of making round as well as sharp bends. It is made of solid steel, the upper edge being 3/4 of an inch wide, so that small members can be formed. For ordinary work an angle-shaped bar is attached, which increases the width to 1 3/8 inches.

FOLDING BLADE around which the material is bent is fastened by means of screws, and it can easily be removed to permit of substituting others of different profile.

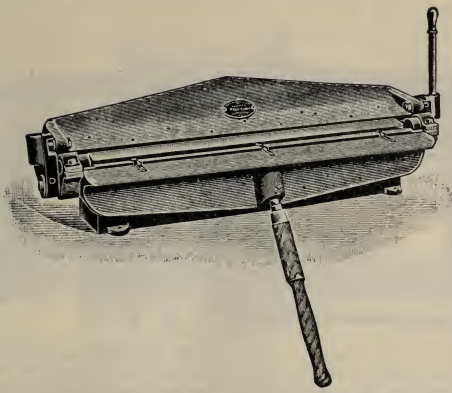
BACK GAUGE is adjustable from 3/4 to 10 inches, and it can be removed entirely. The rods that carry the gauge are graduated in sixteenth inches. When the material must be inserted between the jaws beyond the range of the gauge, it is not necessary to remove the latter, as it will not be in the way

ADJUSTABLE STOPS. On the one end of the Folder there is a segment-shaped casting carrying adjustable stops to regulate the angle of the bend. The stops can be thrown instantly in and out of position.

FRONT GAUGE adjustable for locks from 3/8 to 3/4 inch wide can be provided at extra cost.

	Code Word.	Shipping Weight	Price.
42-inch Niagara Universal Folder and Brake, including one blade for sharp locks	Ranches	475 lbs.	$55 00
Front Gauge.....extra,	Rancido	.....	3.00
Iron Legs and Foot Treadle Attachment for opening and closing the jaws, motion 3/4-inch. .....extra,	Randlos	.....	15.00

HEAVY OPEN THROAT FOLDER.



Capacity, No. 20 Iron and lighter.

These Folders are adapted to a large range of work. The sheet remains stationary while the edge is being bent and while the folding bar returns to its original position. The clamping bar is actuated by cams and lever. The front gauge on the folding bar is adjustable for close locks from ¼ to 2 inches wide, and bends, at an angle of 45 degrees or more can be made any distance from the end of the sheet.

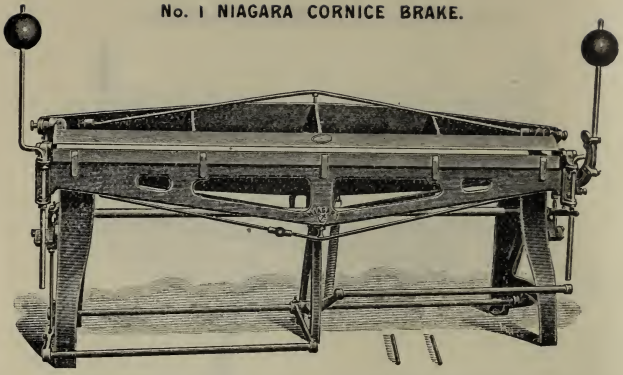
No. 2 will answer for No. 18 iron, if the lock is wider than ½ inch.

	CODE WORD.	SHIPPING WEIGHT.	PRICE.
No 2 Heavy Open Throat Folder, 24 inches.....	Ramot	350 lbs.	$40.00
No. 3 " " " " 36 "	Ramrod	500 "	50 00
Iron Legs.....extra.	Ramtil	.....	8 00

SPECIAL FOLDERS.

Besides the Folders mentioned in this catalogue, we have a large number of special patterns which can be used in filling orders for work out of the capacity of any Folders listed. When inquiring for such folders, please give full particulars of the work to be done

No. 1 NIAGARA CORNICE BRAKE.



This brake is made entirely of iron and steel. By distributing the metal on correct principles, we succeeded in constructing a brake lighter than other iron brakes, and yet perfectly adapted to the ordinary work of cornice makers. We avoided surplus stock, which only adds to the cost and transportation charges and makes a brake unhandy. And, on the other hand, we did not have recourse to materials susceptible to changes of temperature and dampness.

Tension rods are applied to the three leaves to insure stiffness, and by means of which any spring that may occur can be taken up. Rigidity is also insured by the center leg.

The clamping of the material is accomplished by powerful toggle levers, connected by a strong shaft. The two levers can be adjusted independently. The jaws are recessed towards the back to allow formed members to enter without being injured. The clamping bar is steel lined and adjustable from front to back. The upper edge of the bending bar is ¾-inch wide, and for bending heavy stock an angle iron is attached to it which increases the width to 1⅞-inch. The bending bar is adjustable up and down to compensate for wear.

The clamping bar can be raised and lowered by the operator conveniently when he stands before the machine or at either end. By depressing the left hand treadle, or raising one of the end levers, the clamping bar is lifted up, and it remains in this position until the operator depresses the right hand treadle or lowers one of the end levers.

The bending bar is light and, consequently, easy to handle, being perfectly counterbalanced by means of adjustable weights. The clamping bar can be raised about one inch in the manner described above, and after sliding out the two pivot pins it can be lifted up to the vertical position. The adjustability of the bending leaf enables the operator to make round bends.

At the right hand end of the machine there is a quadrant gauge with three adjustable stops, which can be quickly thrown out of the way. Five wooden formers are included in the price.

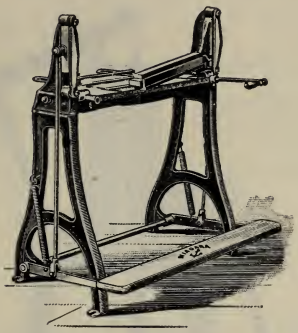
Will bend No. 22 iron with the angle iron on bending bar.

Will bend No. 24 iron without the angle iron.

	Code Word.	
No. 1—8-foot Niagara Cornice Brake, shipping weight, 1,800 lbs.....	Ranft.	$150.00
Beading Attachment, including one rod (state diameter wanted), extra,	Rangue.	22.00

Code Word of Beading Attachment calls for rod, ¾-inch diameter.

SQUARE BODY AND PIPE FORMERS.



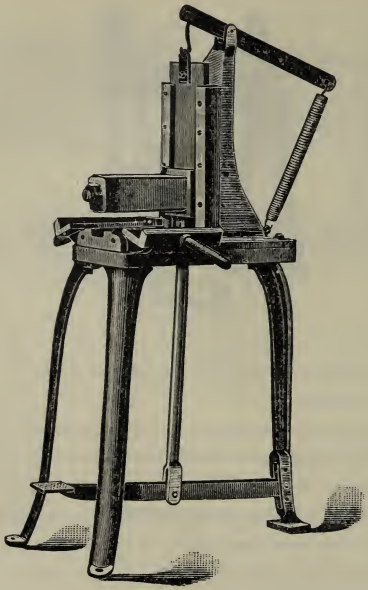
For forming square or oblong can bodies, pipes, etc., with *round* or sharp corners this machine is unexcelled.

The clamping bar is made to swing sideways so that bodies may be slipped off at the one end, and it has detachable corner-forming pieces, which are screwed against its face. With each machine we furnish three forming pieces, one for square and two for round corners, having ¼" and ½-inch radius; other sizes can be supplied to special order.

A depression of the treadle brings down the clamping bar, and the hinged folding bar forms the corner, either square or round, according to the forming piece in use. The blank is first brought against the gauge furthest from the operator, and the operation repeated until all four sides are completed.

	Code Word.	Shipping Weight.	Price.
14-inch Square Body and Pipe Former, with 3 Forming Bars,	Rancar	225 lbs.	$34.00
20 " " " " " " " " " "	Ransels	250 "	37.00
30 " " " " " " " " " "	Ranular	365 "	40.00
36 " " " " " " " " " "	Rapace	425 "	50.00
42 " " " " " " " " " "	Rapelho	560 "	65.00
14 " " " " " " for bench, with stationary bar, for sharp corners only.....	Raphon	170 "	25.00

CAN BODY FORMING MACHINE.



For forming the bodies of square, oblong, conical and pyramidal cans. It is not adjustable, each machine being fitted for the work it has to do, but several forming parts for different sizes and styles of cans may be fitted to the same stand. By a slight modification, cans with lapped seams may be soldered at the same setting.

Weight complete, about 300 lbs.

	Code Word.	
Can Body Former, not including forming parts.....	Rapillo.	$45.00

Forming Parts extra, according to size and shape.

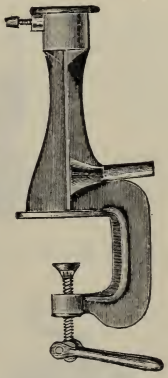
In case of inquiry, please state dimension of cans and send sketch showing shape, also location of seam.

SUPERIOR MACHINE STANDARD.

This Standard is packed with all Niagara "Superior" Machines unless the "Improved" Standard is ordered. It is quickly adjusted to any bench varying in thickness from 1 to 3½ inches. Owing to the shape of the Standard, the socket is in such position that the machine is brought beyond the bench, and even on large work the bench will not interfere with the work.

	Net Weight.		
Superior Machine Standards.....	12 lbs.	each,	$1.00
" " " Heavy.....	24 "	"	1.25

IMPROVED MACHINE STANDARDS.



They can be used on any bench varying in thickness from 1 to 3 inches. The necessity of cutting holes in the bench is obviated, and the tinner is enabled to use a machine in any part of his shop most convenient to his work The wrench is always attached to the standard.

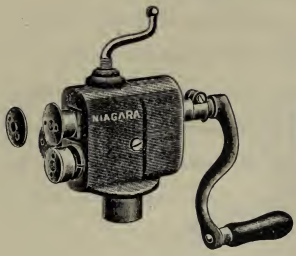
	Net Weight		
Improved Machine Standards.....	12 lbs	each,	$1.00
" " " Heavy...	21 "	"	1.25

FLOOR MACHINE STANDARD.

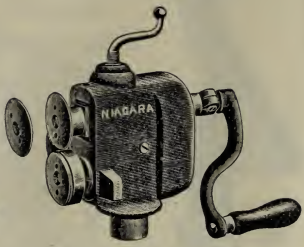
This Standard is desirable for Beading and similar machines operated by belt power. Height, 39 inches. Size of socket hole and flange to order.

	Code Word.	Net Weight.	
Floor Machine Standard	Rapsito.	85 lbs.	$6.00

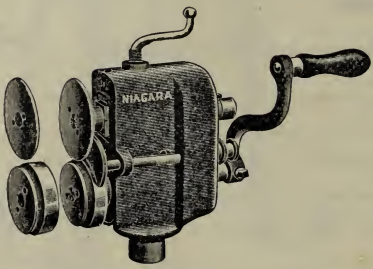
NIAGARA "SUPERIOR" MACHINES — ENCASED.



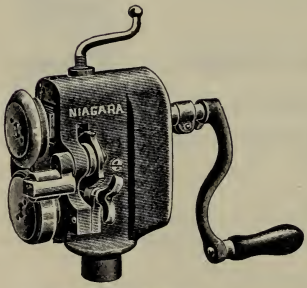
Superior Small Burr.



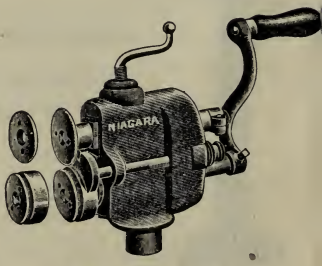
Superior Large Burr.



Superior Large Turner.



Superior Wiring Machine.



Superior Small Turner.

NIAGARA "SUPERIOR" MACHINES — ENCASED.

The illustrations on page 16 represent the latest improved Tinners' Bench Machines. They are made from new patterns and embody original features.

The Frames or housings are of modern design, pleasing outlines, and they are extra heavy to insure strength.

The Crank Screw that raises and lowers the upper shaft is in such position that it will not interfere with the work. This screw moves the upper shaft twice as quickly as the crank screw on the ordinary machines.

The Upper Face will go over seams without causing strain or breakage.

The Gauges are made of the best tool steel, and hardened to reduce the wear.

In addition to these new features, the Superior Machines possess all the desirable qualities of our old style Encased Machines, viz.: Removable faces, interchangeable parts, adjustment for wear, brass boxes, etc.

	Code Word.	Shipping Weight.	With Stand.
"Superior" Wiring Machine	Rapsodo	38 lbs.	$14.00
" Large Turning Machine, } with extra upper and	Raptor	38 "	11.50
" Small " " } lower faces,	Raptus	34 "	11.25
" Extra Small Turner, diameter of faces same as Small Burr	Rarebit	28 "	12.00
" Large Burring Machine, } with extra upper face,	Rarefy	32 "	10.50
" Small " " }	Rarete	28 "	10.00

Without Standard, 75 cents less.

The *quick adjusting Superior Standard*, shown on page 15, is furnished with these machines, unless the Improved Standard is specially ordered.

Elbow Edging Faces to Turner (state factory number of machine).....per pair $2.50
Treadle Attachment in place of Crank Screw.....extra 4.00
Tight Pulley..... " 3.00

Either the Niagara or the Superior Setting Down Machine can be furnished with this set.

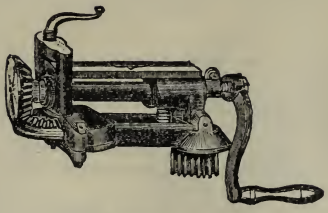
DIRECTIONS FOR ADJUSTING FACES.

An adjustable box is used on each machine, by means of which the upper faces can be moved backward or forward to accommodate different thicknesses of tin, or to compensate for the wear of the journals. In adjusting the faces by means of this box, it is only necessary to loosen the screw in the clasp nut H and turn H backward or forward, as the case may require, until the face is brought to the desired place, when H should be fastened by tightening the screw No. 5. When the boxes under the lower shaft wear they can be raised by means of the screw No. 3 under the frame A.

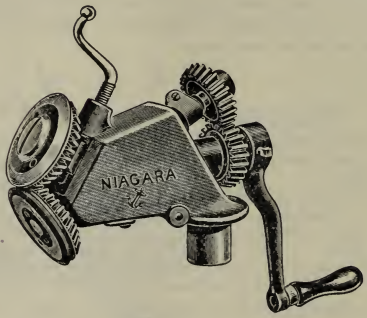
The machines can be readily taken apart by taking out the screw No. 2.

The faces of all our Encased and Raymond Machines are removable from the shafts.

SETTING DOWN MACHINES.



Niagara.



Superior.

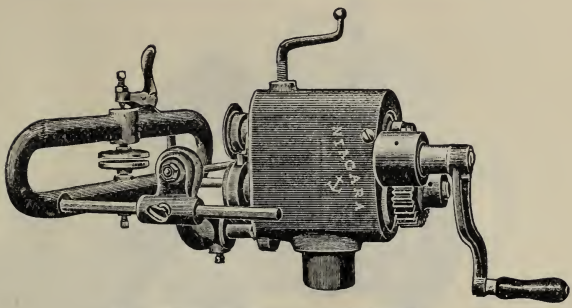
These Machines follow the Burring Machines and press the edge of the bottom on to the flange of body of cans and similar work.

SUPERIOR—Is constructed on a new principle, and it possesses the advantage that the operator can start the seam inward while setting it down, thereby facilitating the operation of double seaming. It is now made geared to bring the crank in usual position.

	Code Word.	Shipping Weight.	With Stand.
Superior Setting Down Machine	Rascoa	34 lbs.	$ 9.75
Niagara " " "	Rasgar	28 "	9.75
" " " " extra heavy, for seam $\frac{3}{16}$-inch wide	Rasimus	33 "	11.00

Without Standard, 75 cents less.

HEAVY SUPERIOR MACHINES—GEARED.



Heavy Superior Burr with Circular Attachment.

For No. 20 Iron and lighter.

These Machines are intended for the same kind of work as the ordinary Tinners' Bench Machines except that, owing to their ample proportions and the back gears they are suitable for heavier work. They are made either with wiring faces and idler, or with turning or burring faces. All are provided with suitable gauges.

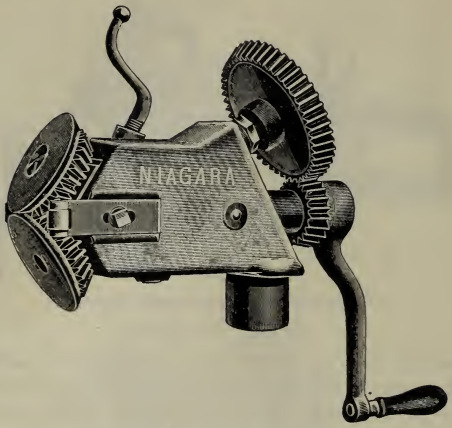
	Code Word.	Shipping Weight.	With Stand
Heavy Superior Wiring Machine, geared, with one pair of faces 3 inches diameter	Rarity	105 lbs.	$24.00
Heavy Superior Turning Machine, geared, with one pair of faces 3 inches diameter	Raros	100 "	22.00
Heavy Superior Burring Machine, geared, with one pair of faces 2¾ inches diameter	Rasados	100 "	22.00
A heavy standard, Superior style, page 21, is included in the price.			
Tight Pulley extra,			4.00
Treadle Attachment in place of crank screw "			5.00
Extra Faces each,			1.50

CIRCULAR ATTACHMENT.

This Attachment, which is shown above in connection with a Heavy Burring Machine, facilitates burring or flanging the edges of round disks. It enables inexperienced operators to do perfect burring work, which otherwise requires experts. A gauge is provided for centering the work. The Attachment is suitable for flanging disks from 4 inches to 20 inches diameter.

Circular Attachment to Heavy Superior Burring Machines (Code Word, Rasch), $10.00

SUPERIOR SETTING DOWN MACHINE—GEARED.



Capacity, No. 20 Iron and lighter.

The inclined position of both faces enables the operator to start the seam inward while setting it down, thereby facilitating the succeeding operation of double seaming. The Machine is back-geared and heavily constructed. An adjustable gauge is provided to suit seams of different widths. The Machine fits our heavy Superior Standard.

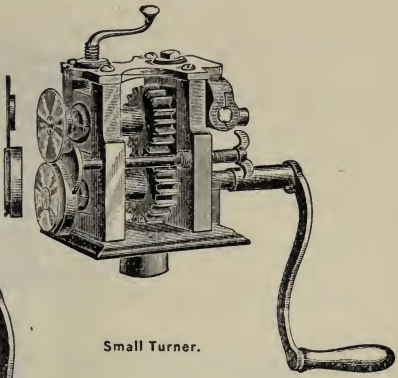
	Code Word.	Shipping Weight.	
Heavy Superior Setting Down Machine, back-geared, with Standard	Raspajo.	98 lbs.	$22.00
Extra Faces.....each,			2.0

TUCKING OR CONTRACTING MACHINE.

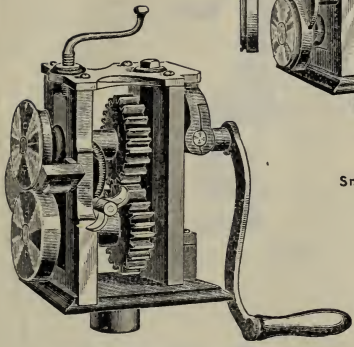
This Machine is frequently used in canning and tinware factories. It is intended for contracting inward or swaging outward the top or bottom edges of can bodies, etc.

	Code Word.	
Tucking or Contracting Machine with Improved Standard.....	Rassalto.	$12.00

RAYMOND'S MACHINES.



Small Turner.



Wiring Machine.

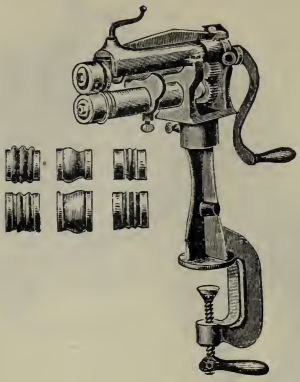
They are intended for the same work as the Encased Machines. Their construction is more simple, and the gears are not encased. The faces are removable from the shafts. Our Raymond's Machines are furnished with Niagara Improved Standards.

When ordering parts please give number and name of machine.

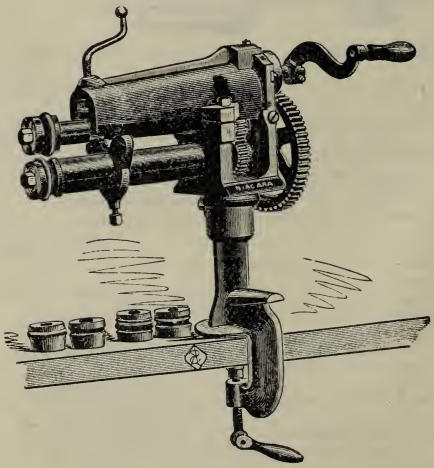
	Code Word.	Shipping Weight.	With Improved Stand.
Raymond's Wiring Machine	Rasta	37 lbs.	$12.00
" Large Turning Machine, with extra upper and lower face	Rastlos	41 "	10.25
" Small Turning Machine, with extra upper and lower face	Rastort	34 "	10.00
" Large Burring Machine, with extra upper face	Rastrop	33 "	9.00
" Small Burring Machine, with extra upper face	Rasttag	30 "	8.50
Extra Faces for Wiring Machine, each	.....	.....	1.50
" " " Turning and Burring Machine, "	.....	.....	1.00

Without Standard, 75 cents less.

NIAGARA BEADING MACHINES.



No. 4.



No. 2.

NIAGARA BEADING MACHINES.

Intended for ornamenting and strengthening tinware and other sheet metal goods. Several pairs of rolls of different designs accompany each machine, and rolls with special designs can be made to order.

All the parts of Niagara Beading Machines are made to standard sizes. Any piece can be duplicated by designating the number of the machine and the part wanted.

Nos. 1 and 2 — Capacity, No. 20 iron and lighter. Sizes of beads: 1-inch O. G., 1-inch Triple, ⅜-inch Single.

No. 3 — Capacity, No. 20 iron and lighter. Sizes of beads: ⅞-inch O. G., ⅞-inch Triple, $\frac{5}{16}$-inch Single.

No. 4 — Capacity, No. 26 iron and lighter. Sizes of beads: ¾-inch O. G., ⅝-inch Triple, ½-inch Triple Coffee Pot, $\frac{3}{16}$-inch Single.

No. 5 — For tin. Sizes of beads: ⅝-inch Astral, $\frac{7}{16}$ inch O. G., ⅜-inch Triple, ⅜-inch Double, ⅛-inch Single.

	Throat.	Code Word.	Shipping Weight.	Price
No. 1 Beader, with 3 pairs of rolls and stand...	13 inches	Rasuros	165 lbs.	$32.25
No. 2 " " 3 " " " " ...	10 "	Ratably	150 "	31.25
No. 3 " " 3 " " " " ...	7½ "	Ratapla n	100 "	26.25
No. 4 " " 4 " " " " ...	6 "	Ratelon s	47 "	19.75
No. 5 " " 5 " " " " ...	4 "	Rathbar	34 "	16.75

Extra Steel Rolls for Nos. 1 and 2.....per pair,	$3.50
" " " " No. 3 ..... "	3.00
" " " " No. 4 ..... "	2.00
" " " " No. 5 ..... "	1.25
Crimping Rolls to Beaders Nos. 1 and 2..... "	6.00
" " " No. 3..... "	5.00
" " " No. 4... "	3.50
" " " No. 5..... "	2.50
Improved Standards for Nos. 1, 2 and 3 .....each,	1.25
" " " Nos. 4 and 5..... "	1.00

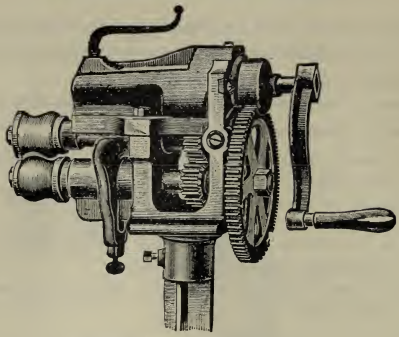
To special order our Beading Machines can be supplied with fixed standard to screw to bench, and T. and L. pulleys, supported by a bracket, as per cut of No. 6 Power Machine on page 24.

T. and L. Pulleys and Fixed Standard to Nos. 1, 2 and 3 Beaders, extra.....	$12.00
" " " " " " Nos. 4 and 5 Beaders, extra	10.00

SPECIAL MACHINES.

Our Beading and similar machines can be adapted to a large variety of special work, and we have also a number of other patterns. Prices will be named on receipt of particulars as to work.

No. 02½ BEADING MACHINE.

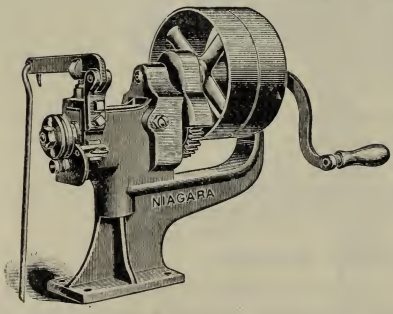


Capacity, No. 16 Iron and lighter.

This Machine is compact and powerful. It will bead up to 4 inches from the edge of the sheet, and can be supplied with pulleys. One pair of rolls—2¼-inch O. G.—accompanies the machine.

	Code Word.	Shipping Weight.	Price.
No. 02½ Beader for hand, with Improved Standard.....	Ratillon	135 lbs.	$30.00
" " with T. pulley and Improved Standard...	Ratjes	.....	35.00
" " " T. and L. pulleys and fixed Standard	Ratline	210 lbs.	42.00
Extra Steel Rolls.....per pair,	.....	.....	5.00

No. 6 POWER BENCH MACHINE.

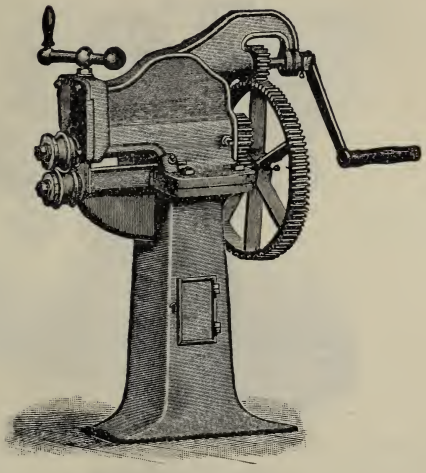


On this Machine the bearings of the shafts are near the working faces, to insure stiffness. The standard is screwed to the bench, and the upper face is lowered by foot treadle attachment, thus leaving the operator with both hands free. The faces are made to suit the work, and they are not included in the price.

The machine can be furnished direct acting to increase the speed.

	Code Word.	Shipping Weight.	
No. 6 Power Bench Machine with treadle attachment, not including working faces.....	Ratoon.	70 lbs.	$25.00

No. O NIAGARA BEADING MACHINE.



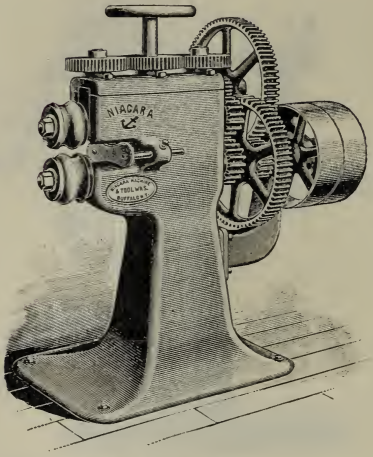
For No. 14 Iron and lighter.

With suitable rolls this machine can be used for beading, corrugating, embossing or flanging sheet iron up to No. 14 gauge, for stove bodies, furnace shells, corrugating the ends of heavy sheet metal drums, powder kegs, and a variety of work requiring heavy material. It will also operate on tin plate, zinc or brass.

Distance from rolls to frame, 10½ inches. Usual rolls have 1¾ inch O. G.

	Code Word.	Shipping Weight.	Price.
No. o Beader on Standard, with one pair of O. G. Rolls...	Ratte	700 lbs.	$115.00
" " with T. and L. pulleys.....	Raubbau	.....	125.00
" " with clutch and T. pulley.....	Raubgut	.....	140.00
Extra Rolls of ordinary size and shape.....per pair,	.....	.....	16.00

No. 00 NIAGARA BEADING MACHINE.



For No. 8 Iron and lighter.

This Machine was constructed for pressing beads in heavy material up to No. 8 gauge, and work of similar character.

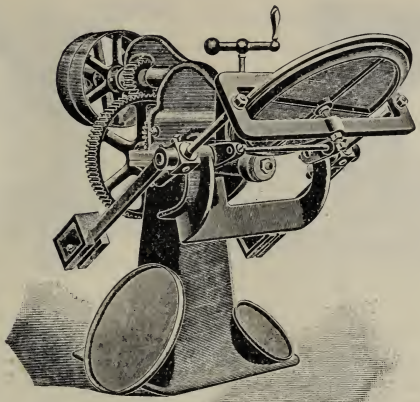
The upper shaft and roll move parallel to the lower and the distance between shaft centers can be varied from 6 to 8¼ inches by means of the hand wheel, *i. e.*, the upper shaft can be raised 2¼ inches. The connecting gears always remain properly meshed. This is a decided advantage in pressing deep beads.

A pair of rolls for an ogee or other plain design is included in the price.

Proportion of gearing	12: 1
Diameter of shafts	2 inches.
Diameter and face of pulleys	16 x 5 inches.
Depth of throat	7½ inches.

	Code Word.	Shipping Weight.	
No. 00 Beader with 1 pair of rolls and T. and L. pulleys,	Raubnest.	1400 lbs.	$275.00
Extra Rolls of plain design		per pair,	25.00

NIAGARA BOTTOM FLANGING MACHINES.



These Machines were designed for turning flanges on bottoms of heavy material The round blank is centered and clamped on the yoke, which is carried by the swivel arm and counterbalanced. While the edge is being raised between the rolls, the yoke is brought upwards, the illustration showing it in the final position. By removing the flanging attachment and substituting suitable rolls, the machine will answer for a variety of other work, such as beading, corrugating, etc.

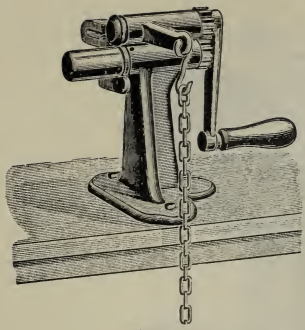
No. 0 is made off the patterns of No. 0 Beader, page 25, and will flange bottoms from 10 to 48 inches diameter, of Nos. 12 to 18 gauge iron or soft steel. On Nos. 12 and 14 gauge the flange can be made up to ¾ inch high; on lighter gauges the material will not permit of flanging higher than ⅝ or ½ inch.

No. 00 is made off the patterns of No. 00 Beader, page 26, and will flange bottoms from 14 to 60 inches diameter, of Nos. 8 to 18 gauge iron or soft steel. On heavy copper the flange can be made up to 2 inches high. Otherwise the height of the flange must be about in the same limits as on the No. 0

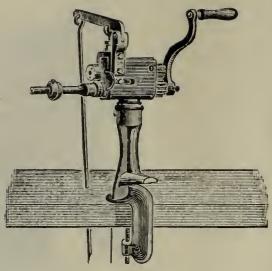
	Code Word.	Shipping Weight.	
No. 0 Niag. Bottom Flanging Mach. with T. and L. pulleys,	Raubzug.	1100 lbs.	$160.00
No. 00 " " " " " " "	Raufen.	2000 "	325.00

Price includes Swivel Attachment and one pair of flanging rolls.

CAN BEADING MACHINES.



No. 1.

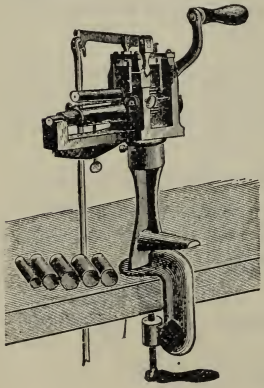


No. 2.

These Machines are designed for beading blacking and baking powder boxes, lobster can bodies, etc. They have treadle attachment, and can be supplied with pulley, if desired.

No. 2 Can Beader fits our Tinners' Machine Standard. It is suitable for somewhat heavier work than the No. 1. The carrier on the projecting spindle is adjustable to carry cans of different lengths.

	Code Word.	Shipping Weight.	
No. 1 Can Beader with standard and one pair of rolls.....	Raulim.	30 lbs.	$16.00
No. 2 " " " " " " "	Raupe.	40 "	20.00
Tight Pulley.....		extra,	3.00



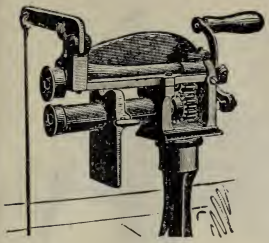
CANDLESTICK FORMER AND BEADER.

This Machine is designed for forming and beading short tubes of light material, not less than 7/8 inch diameter, such as blacking and pepper boxes, candlesticks, whip sockets, etc. The shafts are of steel. Can be furnished with pulley.

No. 1 Candlestick Former for work up to 5 inches long (Code Word, Ravage)..... $20.00

No. 2 Candlestick Former for work up to 6½ inches long (Code Word, Ravener)..... 25.00

CRIMPING MACHINES.



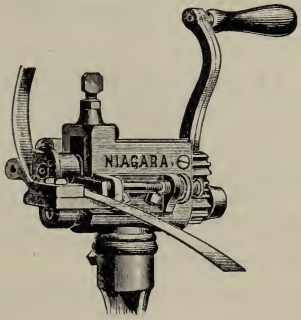
For crimping bottoms, either recessed or plain, on boxes, cans, cups, etc. The gauges are adjustable, and the top roller is brought down by foot treadle.

No. 1—For bottoms 2½ inches diameter and larger, and bodies up to 7½ inches long.

No. 2—For bottoms 1½ inches diameter and larger, and bodies up to 6 inches long.

	Code Word.	Shipping Weight.	
No. 1 Crimper, with standard	Rayons.	110 lbs.	$18.00
No. 2 " " "	Razago.	67 "	15 00
Extra Faces		each,	1 50

NIAGARA ENCASED RIM MACHINE.

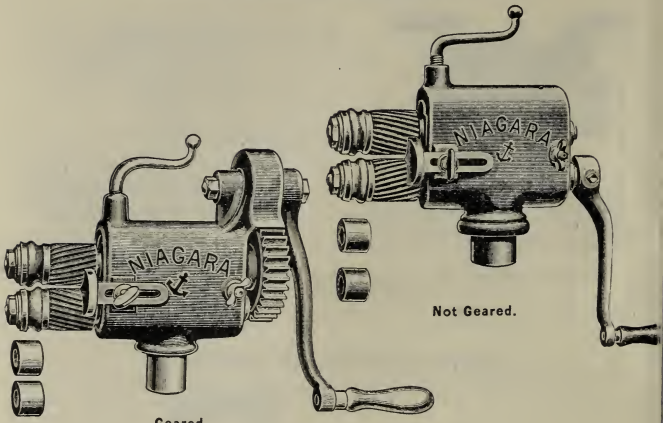


Our improved Rim Machine is designed for making rims for covers of pails, etc. It will flange, curve and contract the edge of the rim, all at one operation. By means of this machine a boy can make and curve more rims in an hour than the most experienced workman can finish in a day by making them in the old way on a burring machine. It is an encased machine; the gears are cut, and the parts are interchangeable. The machine is adjustable for rims from ⅜ to 1¼ inches wide, 2 inches diameter and larger.

The widest flange the regular faces will turn is $\frac{3}{16}$-inch. Special faces can be made, at extra cost, to turn ¼-inch flange on heavier tin, also for putting the flange towards the inside of the rim.

	Shipping Weight.	
Niagara Encased Rim Machine, with standard (Code Word, Razaren),	39 lbs.	$18.00

IMPROVED NIAGARA CRIMPER AND BEADER.



Not Geared.

Geared.

This machine is of modern design and intended to facilitate putting together metal pipe of various diameters. The rolls crimp and contract the end of the pipe so that the lengths are easily put together. The material is beaded at the same time.

ADJUSTMENT.—Our new Crimper and Beader possesses the advantage that the relative depth of the crimp and bead can be regulated quickly and with ease, *i. e.*, a distinct crimp can be made in connection with a shallow bead, or *vice versa*, or both can be made uniform. This adjustment is made by means of two wing nuts, near the handle. By loosening the one and tightening the other, the upper shaft is tipped either towards the front or towards the handle, as may be desired.

The crimping and beading rolls are made of steel and hardened. The gears are machine cut of steel and all parts interchangeable. We furnish a pair of plain collars to take the place of the beading rolls when crimping only is to be done.

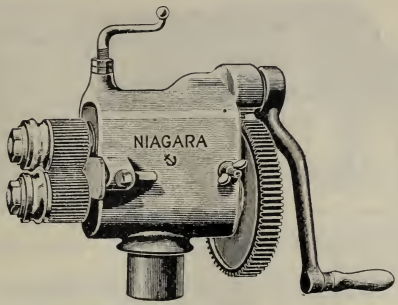
When ordering parts, state the factory number of the machine.

The direct acting machine works faster; the geared one is easier to operate.

	Code Word.	Shipping Weight.	
Niagara Crimper and Beader with standard.....	Ravines.	44 lbs.	$12.00
" " " " " " treadle attachment in place of crank screw.....	Rawish.		16.00
Crimping Rolls.....		per pair,	3.00
Beading "		"	2.00
Plain Collars.....		"	1.25

Rolls with spiral crimp as above are sent along, unless rolls with straight crimp are ordered.

HEAVY NIAGARA CRIMPER AND BEADER—GEARED.



For No. 20 Iron and lighter.

The frame and other parts of these machines are made extra heavy, and the machine is back geared to permit of crimping and beading heavy metal

The crimping and beading rolls are made of steel and hardened.

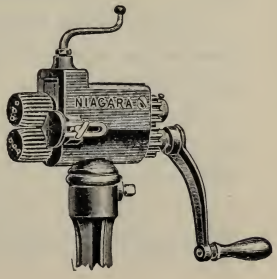
The connecting gears are cut of steel, and adjustment is provided to regulate the relative depths of the crimp and bead. By loosening one of the wing nuts shown at the handle end of the frame and tightening the other, the upper shaft is tipped either towards the front or towards the back, as may be desired. In this manner the operator can produce a distinct crimp in connection with a shallow bead, or *vice versa*, or both can be made of uniform depth.

The price includes a pair of plain collars to take the place of the beading rolls when crimping only is to be done.

For light work the machine can be run direct to increase the speed.

	Code. Word.	Shipping Weight.	
Heavy Niagara Crimper and Beader with stand	Rawley.	100 lbs.	$28.00
Crimping Rolls		per pair,	6.00
Beading "		"	4.00
Plain Collars		"	1.50
Tight Pulley		extra,	4.50
Treadle Attachment in place of crank screw		"	5.50

CORNICE MAKERS' CRIMPER.

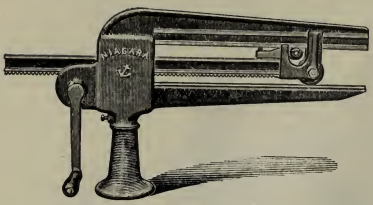


On this machine, which is now made off the patterns of the Improved Niagara Crimper and Beader, page 38, the shafts do not extend beyond the end surface of the crimping rolls. This enables the operator to crimp close up to a bend.

The connecting gears are of steel.

Cornice Makers' Crimper and Beader with stand (Code Word, Rayar), Shipping Weight, 37 lbs.		$12.00
Treadle Attachment in place of crank screw (Code Word, Rayol)		4.00

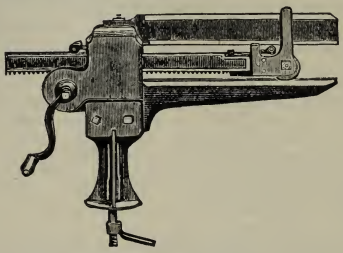
BUFFALO GROOVER.



This machine is of neat and modern design The anti-friction roller that receives the upward pressure runs in an oil bath. The rack is provided with a guard to prevent the material from getting caught between the teeth. After loosening the set screw near the handle the machine can be turned in any desired direction, and the operator is not compelled to unscrew the standard below the table. Three grooved rolls, $\frac{5}{32}$, $\frac{3}{16}$ and $\frac{1}{4}$-inch, are sent along.

20-inch Buffalo Groover, shipping weight, 100 lbs.....(Code Word, Reagudo) $13.50

STOW'S BRASS-MOUNTED GROOVER.



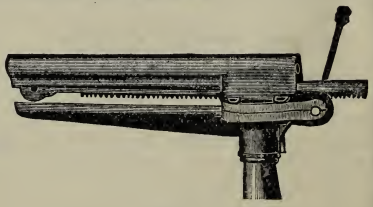
This Groover is supplied with three grooved rolls, $\frac{5}{32}$, $\frac{1}{16}$ and $\frac{1}{4}$-inch wide.

	Code Word.	Shipping Weight	
17-inch Stow's Groover, with stand.....	Really.	94 lbs	$11.00
20 " " " " "	Realist.	100 "	13.50

ENCASED GROOVING MACHINE.

By putting the upper bar inside of the pipe the seam can be grooved towards the inside.

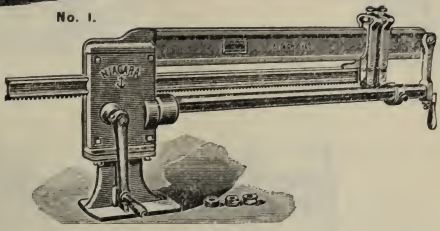
Three grooved rolls, $\frac{5}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$-inch, accompany each machine.



	Code Word.	Shipping Weight.	
17-inch Encased Groover, with stand.....	Realm.	74 lbs.	$11.00
20 " " " " "	Realness.	90 "	13.50

NIAGARA BRASS-MOUNTED GROOVERS.

No. 1.



No. 2.

Capacity, No. 24 iron and lighter.

The reversible horn of this machine permits of grooving 2 inches diameter and larger. By using a flat roll and pressing the seam into one of the grooves planed into the horn, the seam can be grooved towards the inside of the work.

No. 2 NIAGARA GROOVER is arranged for grooving and flattening the seam while the rack with rolls moves over the work once and returns to its original position. In this manner the work and strain on the machine is divided, without loss of time. The grooving roll is in action on the way forward, and the flattening roll on the return trip, the change taking place automatically. A stop is provided on the horn, as shown on No. 2.

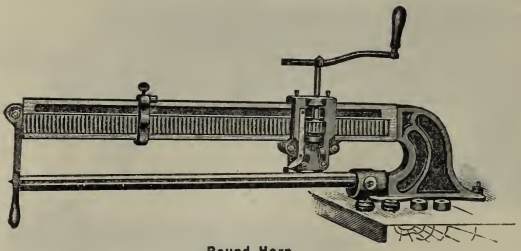
To special order. Niagara Groovers can be arranged for work smaller than 2 inches diameter

Price includes one flat and three rolls, with grooves $\frac{3}{32}$, $\frac{1}{4}$ and $\frac{1}{2}$ inch wide.

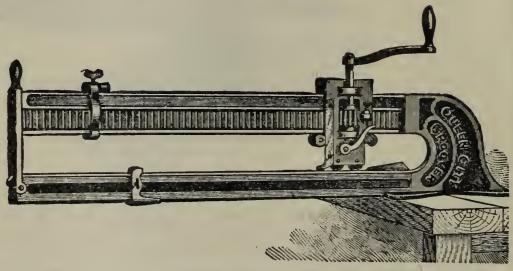
An extra flat roll is sent with No. 2 Groovers. Width of grooves in round horn—$\frac{3}{32}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ inch

	Shipping Weight.	No. 1.		No. 2.	
		Code Word.	Price.	Code Word.	Price.
14-inch Niagara Groover, with standard...	125 lbs.	Reaper	$15.00	Rebalade	$18.00
17 " " " " " ...	150 "	Reapply	16.00	Rebanadera	19.00
20 " " " " " ...	165 "	Reargue	18.00	Rebanego	21.00
30 " " " " " ...	185 "	Reavow	25.00	Rebatar	28.00
36 " " " " " ...	210 "	Rebajado	30.00	Rebeber	33.00

QUEEN CITY SHEET METAL GROOVERS.



Round Horn.



Square Horn.

These are excellent Groovers. They groove and close the seam at the same operation, whereby the work of hammering down the seam with a mallet is saved. The seam is perfect in tightness and appearance. A clamp holds the work at the starting end, and there is an adjustable stop at the other end.

Easy and rapid adjustment is provided for accommodating various thicknesses of material and regulating the tightness of the seam. This adjustment can be made instantly and while the machine is in operation. The machine can be run at two speeds, to facilitate heavy work and to finish light work rapidly.

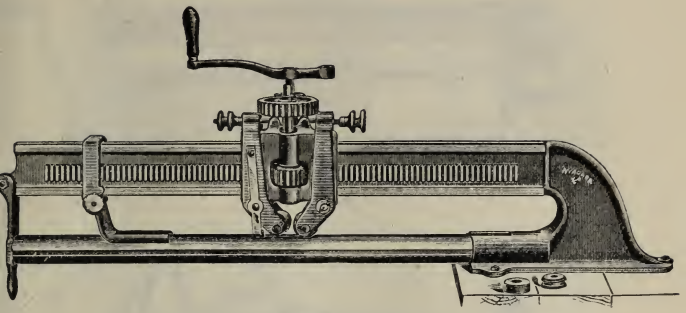
The Groover with square horn will take in work not less than 2⅞ inches diameter. The Groover with round horn is suitable for work 2 inches diameter and larger and for inside as well as outside seaming.

Will groove No. 24 iron and lighter up to 32 inches long. Widths of grooved rolls sent with the machine, $\frac{3}{16}$, $\frac{5}{16}$, $\frac{7}{16}$ and $\frac{9}{16}$-inch.

The round horn has grooves of same width as the rolls.

	Code Word.	Shipping Weight.	
Queen City Groover, with square horn.....	Rebeca.	145 lbs.	$26.00
" " " " round "	Rebel.	160 "	30.00

HEAVY QUEEN CITY GROOVERS.



Geared.

This Groover is intended for heavy work. The traveling carriage has two rolls, one for grooving followed by a flattening roll which tightens the seam.

The two wheels can be adjusted independently, according to the thickness of material, adjustment being made by means of the hand wheels at the upper end of the sliding carriage The bar with the rack carries a hinged stop which prevents the work from slipping off the mandrel while being grooved, and a guide attached to the sliding head holds the folded edge in position laterally. The upward pressure of the sliding head when in operation is taken up by anti-friction rollers. There are several grooves planed into the round mandrel which are used for grooving the seam toward the inside of the work.

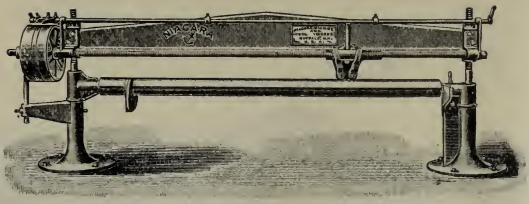
The geared machine is so arranged that it can be run direct, instead of geared, when light material is being grooved and more speed is desired.

36-inch, not geared, for No. 22 iron and lighter, horn 2⅜ inches diameter.
36 " geared, No. 20 " " " " 2¾ " "
48 " not geared, No. 22 " " " " 3 " "
48 " geared, No. 20 " " " " 3¼ " "

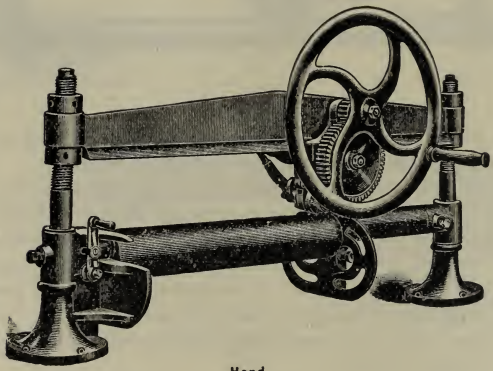
Three grooved rolls ($\frac{5}{16}$, $\frac{7}{16}$ and $\frac{9}{16}$) and two flattening rolls are included in the price.

	Code Word.	Shipping Weight.	Price.
36-inch Heavy Queen City Groover, not geared	Reben	305 lbs.	$40.00
36 " " " " " geared	Rebezos.	345 "	50.00
48 " " " " " not geared	Rebhuhn	410 "	75.00
48 " " " " " geared	Reblaus	450 "	80.00

GIANT GROOVING MACHINES.



Power.



Hand.

These machines are intended for grooving long work, No. 22 gauge or lighter. They are made either for hand or for power The sliding carriage has two rolls, a flat roll following the grooved roll to press the seam tightly The rolls can be adjusted according to the thickness of the material.

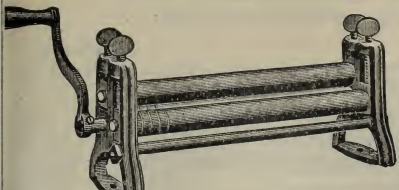
The round grooving mandrel of 8-ft. machine permits of grooving cylinders 5 inches diameter and larger, smallest diameter 6 inches if 10 feet long. The seam can be grooved towards the outside of the work, as usual, or towards the inside by using flat rolls on the carriage and pressing the seam into grooves of proper width which are planed into the mandrel. To facilitate putting in place and removing the work, the horn is made to swing sideways and gauges are provided at both ends.

In order to increase the speed in grooving light stock, an extra pair of driving gears can be furnished. To special order we can make Giant Groovers for square or irregular work and for round work less than 5 inches diameter.

Three grooved rolls, $\frac{5}{16}$, $\frac{7}{16}$ and $\frac{9}{16}$-inch accompany the machine, and there are grooves in the mandrel of the same sizes.

	CODE WORD.	SHIPPING WEIGHT	PRICE
8-foot Giant Groover, for hand	Rebles	1700 lbs	$
10 " " " " power	Rebloom	2000 "	$
8 " " " " power	Rebocar	1850 "	$
10 " " " " "	Rebolir	2150 "	$

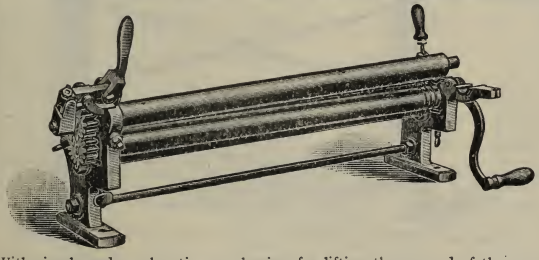
FORMING ROLLS—PLAIN.



For forming light sheet metal into cylindrical shape, such as tin pipe, can bodies, stove pipe, etc. The rolls are of steel, finely finished, and free from indentations and imperfections. Our Formers with rolls 1 and 1½-inch diameter have brass gears; larger sizes have steel gears.

	Diameter.	Length.	Code Word	Shipping Weight.	Price.
Tin-Pipe Former	1½ inches	16 inches	Rebora	62 lbs.	$ 9.00
" "	1½ "	20 "	Rebosa	70 "	10.00
Stove-Pipe "	1¾ "	30 "	Rebours	118 "	18.00
" "	2 "	30 "	Rebozo	140 "	19.00
Can-Body "	2 "	37 "	Rebraco	160 "	22.00
" "	2 "	40 "	Rebramar	170 "	24.00
Forming Rolls	2½ "	30 "	Rebsieb	225 "	38.00
" "	2½ "	37 "	Rebstock	255 "	43.00
" "	2½ "	42 "	Rebuff	275 "	48.00

SLIP ROLL STOVE AND TIN-PIPE FORMERS.



With simple and quick-acting mechanism for lifting the one end of the upper roll and holding it suspended while work that has been formed around it is being removed.

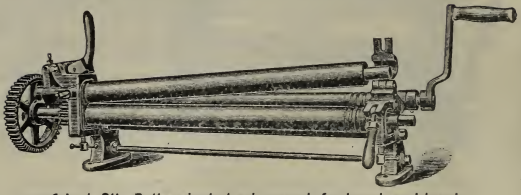
	Diameter.	Length.	Code Word.	Shipping Weight.	Price.
Slip-Roll Former	1 inch	12 inches	Rebujal	40 lbs.	$12.00
" "	1 "	14 "	Rebus	42 "	14.00
" "	1 "	20 "	Rebutir	45 "	16.00
" "	1½ "	16 "	Recaba	68 "	10.00
" "	1½ "	20 "	Recalcar	80 "	11.00
" "	1¾ "	30 "	Recall	140 "	19.00
" "	2 "	30 "	Recambio	160 "	20.00
" "	2 "	37 "	Recanted	185 "	23.00

Iron Legs for Tin and Stove-Pipe Former ..... extra, $7.00
T. and L. Pulleys for Tin and Stove-Pipe Former ..... " 8.00

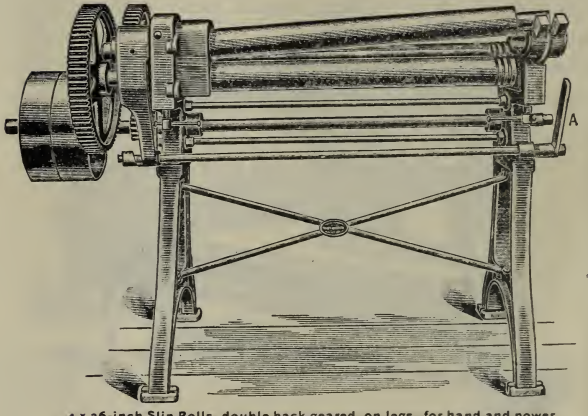
For larger Slip Rolls, see pages 38 and 39.

NIAGARA SLIP ROLL FORMING MACHINES.

WITH LIFTING DEVICE FOR UPPER ROLL.



3 x 36-inch Slip Rolls, single back geared, for bench and hand.



4 x 36-inch Slip Rolls, double back geared, on legs, for hand and power.

Our Slip Roll Formers are of substantial construction and well fitted. The rolls ar of steel, finely finished. They have a simple and quick-acting device for raising one en of the upper roll and holding it up while the operator is removing the work sideways This device is particularly required when removing work of small diameter.

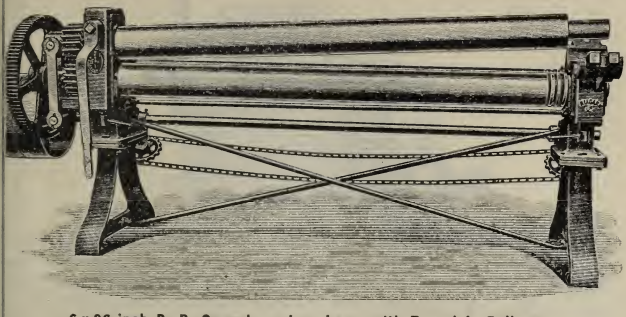
On Formers with rolls 3½ inches diameter and smaller, the one end of the upper ro is lifted by raising the eccentric lever, shown on top of the left hand housing of the 3-inc Slip Roll Former, illustrated above. On Formers 4 inches diameter and larger, the en of the upper roll is lifted by the operator making a half turn with the handle "A," show on cut of the 4-inch Rolls above. 5 and 6 inch Rolls have the raising lever at the le hand side, as per illustration, page 39.

Our Slip Roll Formers are furnished either for bench, or on iron legs so that they ca be used wherever needed. They are arranged to work direct or with single or double bac gear, at proper difference in price. When hand driven, single back-geared Slip Ro Formers can be run direct, and double back-geared machines can be driven from the firs gear shaft. Friction Clutch pulleys, either single or double (for reversing motion), ca be applied instead of T. and L. pulleys, at proper difference in price.

We can make any of the Formers with rolls of lengths different from those given in lis

NIAGARA SLIP-ROLL FORMING MACHINE.

WITH LIFTING DEVICE FOR UPPER ROLL.



6 x 96-inch D. B. Geared, on Iron Legs, with T and L. Pulleys.

Size of Rolls.		Code Word for Plain Rolls.	Plain. For Bench & Hand.		Single Back-Geared. For Bench and Hand.		Double Back-Geared. For Bench and Hand		
Diam.	Length.		Shipping Weight.	Price.	Shipping Weight.	Price.	Shipping Weight.	Price.	Will Form.
2½	30	Recap	300 lbs.	$32.00	350 lbs.	$ 38.00			
2½	36	Recarg	330 "	36.50	380 "	42.50			
3	30	Recast	380 "	55.00	435 "	62 50	500 lbs.	$ 70.00	No. 13
3	36	Recaum	420 "	61.00	475 "	68.50	550 "	76.00	" 14
3	42	Recent	460 "	67.00	525 "	74.50	600 "	82.00	" 15
3	48	Recept	500 "	73.00	565 "	80.50	650 "	88.00	" 16
3½	30	Recess			670 "	85 00	765 "	93.00	" 11
3½	36	Rechac			730 "	94.00	825 "	102.00	" 12
3½	42	Rechant			790 "	103 00	885 "	111.00	" 13
3½	48	Recharg			850 "	112.00	945 "	120.00	" 14
4	36	Recher			1300 "	127.00	1425 "	139.00	" 10
4	42	Rechill			1375 "	137.50	1510 "	149.50	" 11
4	48	Rechin			1450 "	148.00	1590 "	160.00	" 12
5	36	Recht			1800 "	170.00	1950 "	185.00	" 6
5	36	Recidiv			2675 "	280.00	2850 "	300.00	⅜-in

On Legs.

Use Single Back-Gear on 2½ to 3½-inch rolls to form No. 16 easily. Double Back-Gear to form No. 14, long lengths, to small circle. 3-inch and longer rolls should be back-geared; 4-inch and larger rolls must be set on legs.

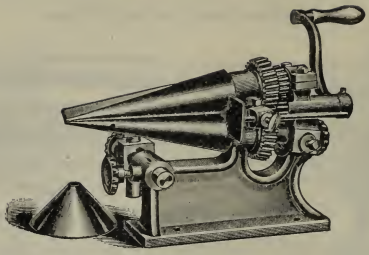
CODE WORD.—To call for Single Back Gear append "at," and to call for Double Back Gear "or" to Code Word of Plain Rolls.

EXTRAS.

	Code Word.	2½	3	3½	4	5	6-inch rolls.
T. and L. Pulleys, extra,	Recifoso.	$6.00	$6.50	$7.00	$7.50	$10.00	$14.00
Iron Legs..... "	Recibos.	6.00	7.00	8.00			
Additional length, "		80	1.00	1.50	1.75	2.50	3.50 per in.

For prices of smaller Slip Rolls refer to page 47 Prices of longer and heavier rolls will be given on application.

FUNNEL FORMER.

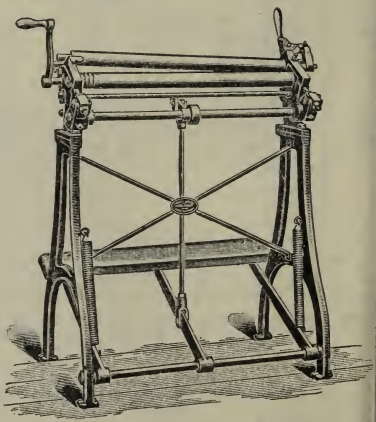


Especially adapted to forming conical and taper work of various angles, that cannot be produced on ordinary Forming Rolls, such as funnels, can tops, lamp shades, etc. The work is more uniform and better than when made by hand. The third or forming roll is adjustable to all positions. Length of Rolls, 10 inches.

	Code Word.	Shipping Weight.	
Funnel Former with treadle attachment for upper roll.....	Recinera.	90 lbs.	$30.00

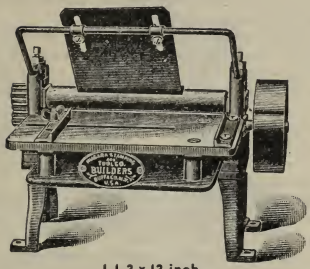
SLIP ROLL FORMER FOR OVAL WORK.

In addition to forming round cylinders, this machine is adapted to forming oval, oblong and irregular shapes. The back or forming roll can be raised and lowered instantly to any desired position by means of the foot treadle attachment. The operator is left with both hands free to handle the sheet. Adjustable stops are provided to fix the highest and lowest position of the forming roll, according to the curve desired. The upper roll has a device for raising its one end and holding it suspended while slipping off the work.



	Code Word.	Shipping Weight.	
Slip Roll Former for oval work, rolls 2 x 30 inches.....	Recipero.	325 lbs.	$26.00

POWER FORMING ROLLS.



1 1-2 x 12 inch.

For forming round can bodies, straight or taper, of any diameter. The stripping achment prevents the work from forming around the upper roll, and the formed dies drop away automatically, without any aid from the operator.

The rolls and gauges are made of steel, the gears are machine-cut, and the bear-gs of bronze metal.

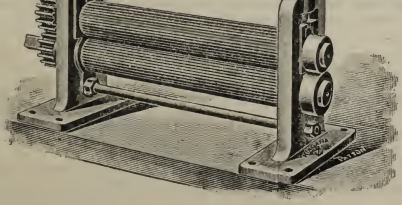
For forming blanks with edges folded previously, a Former with rubber covered ls is preferable.

	Code Word.	Shipping Weight.	
x12 inch Power Forming Rolls with steel rolls	Recitave.	105 lbs.	$30.00
x12 " " " " " rubber covered rolls	Reckless.	.....	35.00

is machine can be arranged for other work such as forming and swedging, at one operation, the bodies of salmon, sardine and other open top cans.

o inch Power Forming Rolls with steel rolls, for bench	Reckon.	.....	50.00
n Legs		extra,	6.00

CORRUGATING AND CRIMPING ROLLS.



DOUBLE SEAMING MACHINES.

Many inquiries having reached us in reference to the best Double Seaming Machines the following general principles are hereby published.

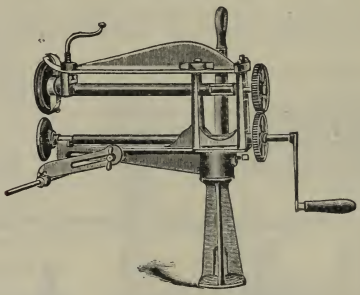
The machine which is best adapted to do all kinds of work is **MOORE'S DOUBLE SEAMER.** A tinner who is required to double seam vessels of all kinds and made o various thicknesses of tin plate will find this to be the most satisfactory Double Seame made. However, more skill is necessary in the use of this machine, and it takes longe for the ordinary tinner to learn to use it, than others.

The Double Seamer which we recommend for special work is **HULBERT'S DOUBLE SEAMER.** It is useful in cases where the work to be double seamed is of a uniform char acter; that is, where a workman needs to double seam pans, pails or other vessels, makin many of a kind at one setting.

OLMSTED'S DOUBLE-SEAMER can be utilized for setting down. Those who ar used to it prefer it to all others. Many, however, experience difficulty in learning hov to handle the machine, and become discouraged.

Each Double Seamer has its friends. A workman who has been accustomed to us either will, at first experience, find some difficulty in using any of the others. We recom mend to parties ordering Double Seamers to take into consideration the kind of work t be done by them, and also the experience of those who expect to use them. If thes principles are followed, more satisfactory results will be obtained than if the machine i ordered simply upon its merits as recommended by the manufacturers.

MOORE'S DOUBLE SEAMER.



For general use. Best adapted to the ordinary wants of tinners.
Diameter of lower face: No. 1, 4½ inch; No. 2, 4 inch; No. 3, 3 inch.
Depth of Throat: No. 1, 15 inch; No 2, 13 inch; No. 3, 10 inch.

	Code Word.	Shipping Weight.	With Stand
No. 1 Moore's Double Seamer	Reck	86 lbs.	$21.00
No. 2 " " "	Reclam	80 "	19.00
No. 3 " " " for coffee pots and small work,	Reclang	70 "	16 00
No. 4 " " " for work 3½ in. diameter and larger, up to 29 in. long, No. 22 gauge and lighter (similar to Furnace Pipe Seamer, page 45)	Repack	375 "	60.00
Extra Stands for Nos. 1 to 3 each,			1.00
" Faces " " " "			1.25

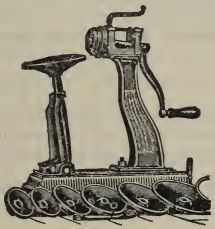
HULBERT'S DOUBLE SEAMER.

Double seams all kinds of flaring and straight work, coffee and tea-pots, oval and round boilers and raised work. It deflects the ware after it is soldered, thus giving strength to the articles.

Ten disks and three faces accompany each Seamer. Diameter of flaring disks, 4⅛, 6¼, 7⅛, 8⅞ and 11½-inch; straight disks, 4¾, 5¾, 8⅜ and 10¼-inch; oval edge disk, 5⅞-inch. Shipping weight—14-inch, 130 lbs.; 20 inch, 160 lbs.

	Code Word.	
Hulbert's Seamer, with deflector for work up to 14 inches high.....	Reclinar.	$27.00
" " without " " " 14 " "	Recludo.	25.00
" " with " " " 20 " "	Recoast.	30.00
Extra Disks.....each,		1.50

OLMSTED'S DOUBLE SEAMER.

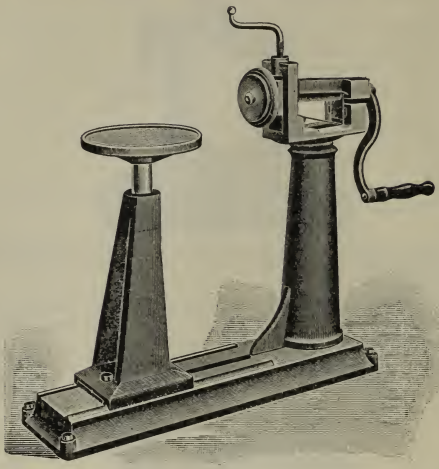


For setting-down, double-seaming and deflecting. With brass boxes and cap. Adapted to straight or flaring work, light or medium tin. Eight disks accompany the machine. Flaring disks, 4½, 6¼, 7¼, 8¾ and 11-inch; straight disks, 4, 5¾, 8½-inch.

	Code Word.	Shipping Weight.	Price.
No. 1—For work up to 14½ in. high, with setting-down,	Recobrar	120 lbs.	$30.00
No. 2— " " " " without "	Recodas	115 "	25.00
No. 01— " " 20 in. high, with "	Recogia	140 "	35.00
Extra Disks.....each,	.....	.....	1.50

These machines can be furnished with treadle, in place of crank screw, if specially ordered. The treadle allows the head to pass over seams without straining the machine.

HULBERT'S DOUBLE SEAMER — EXTRA HEAVY.



Capacity, No. 22 Iron and lighter.

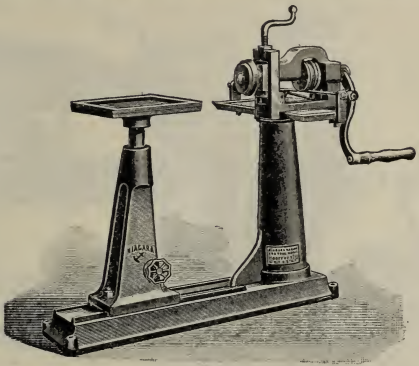
This Seamer is intended for heavy work. The standard with disk receives bodies up to 25 inches high, and to special order the seamer can be furnished to accommodate work up to 33 or 36 inches high. It is operated in the same manner as the ordinary Hulbert's Seamer, favorably known to every tinsmith. The bed and support for seaming head are cast in one piece to insure the utmost rigidity.

This Seamer can be furnished for belt power, also with Setting Down Attachment, which permits of setting down the seam

The price includes one disk, 12 inches diameter. Disks of special sizes can be furnished.

	Code Word.	Shipping Weight.	Price.
25-inch Hulbert's Double Seamer, extra heavy.....	Recoil	450 lbs.	$40.00
33 " " " " " "	Recoin	.....	45.00
36 " " " " " "	Recolar	.....	50.00
Power Attachment, with T. and L. Pulleys.....extra,	Recollect	.....	18.00
Setting Down Attachment..... "	Recomb	.....	15.00

HULBERT'S DOUBLE SEAMER FOR SQUARE WORK—HEAVY.



This Seamer works on the same principle as the ordinary Hulbert's Double Seamer, but will take care of double seaming flat bottoms on to bodies of rectangular shape. The carriage with the double seaming face travels along the edge of the disk that carries the work.

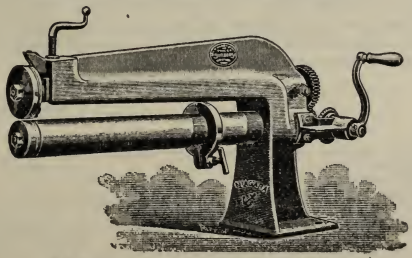
After seaming one side, the horizontal disk is turned to bring the next side into working position. A stop with index is provided to determine this position readily.

Square and oblong work up to 25 inches high and not to exceed 22 inches long can be double seamed. This Seamer will take care of stock from Nos. 22 to 26 gauge and lighter, according to the size of the work. The larger the work, the thinner must be the material.

25-Inch Heavy Hulbert Double Seamer, for square work, not including seaming disks (Code Word, Recomer)..... $75.00

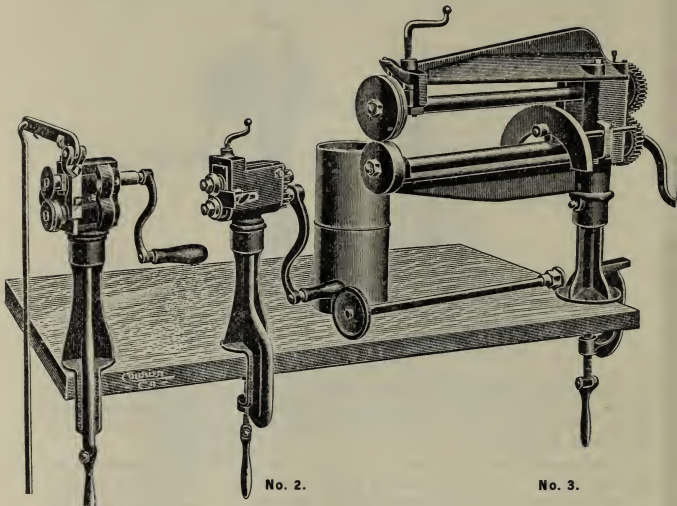
Seaming disks are charged for extra, according to size.

28-INCH FURNACE PIPE SEAMER.



FOR PRICE AND PARTICULARS, SEE PAGE 46.

MACHINES FOR SEAMING FURNACE PIPE.



No. 1. No. 2. No. 3.

The above illustration shows a set of machines for double-seaming the circular joints of round furnace pipe. The seam produced is perfect in tightness and appearance.

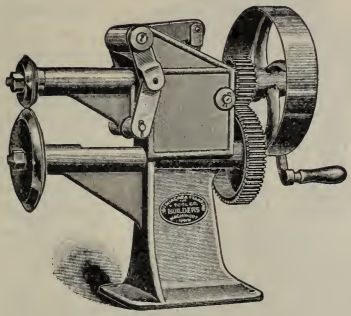
No. 1 is an Encased Burring Machine, with treadle attachment in place of the usual crank screw. It is used for burring the one end of a length of pipe.

No. 2 is a Double Edge Turner, which is used for the other end.

No. 3 is a Pipe Seaming Machine. It has a throat 20 inches deep to accommodate furnace pipe of the usual length. The gauge is adjustable. This machine closes the seam, turns it over, and finally grooves and presses it tightly, without exchange of faces. We also make a larger and heavier Pipe Seamer with a throat 28 inches deep—see page 45.

The illustration shows the machines for hand power, but pulley can be attached, if desired.

	Code Word.	Shipping Weight.	Price.
Encased Burring Machine, with crank screw and standard...	Recondes	.....	$10.50
Double Edge Turner No. 2, " " " ..	Reconfirm	.....	12.50
Extra Faces to Double Edge Turner.....per pair,	.....	.....	3.00
Treadle Attachment to Burr or Turner .....extra,	Reconjoin	.....	4.00
Tight Pulley..... "	.....	.....	3.00
20-inch Furnace Pipe Seamer, with crank screw and standard	Reconsole	175 lbs.	35.00
28 " " " " " "	Recontar	250 "	60.00
Tight Pulley .....extra,	Reconvir	.....	4.00



Large Elbow Seam Closer.

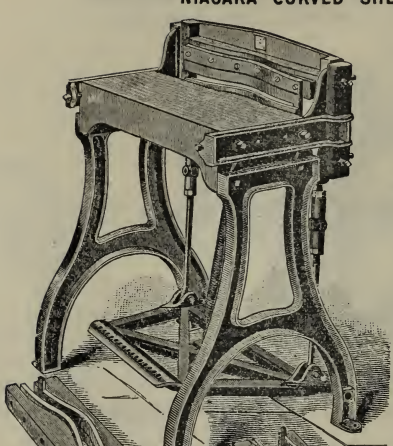
ELBOW TURNER No. 3 shown in cut, page 49, is used for the one edge of elbow sections, and for the other edge a Burring Machine is used. Some elbows have a seam that necessitates an extra set of turning faces, or two Turning Machines in place of the Burring Machine. In place of this machine we can furnish the No. 2 Double Edge Turner, page 46.

ELBOW SEAM CLOSER No. 4 is intended for stove pipe elbows from 3½ to 7 inches diameter. The faces can be used for tight and loose seams.

LARGE SEAM CLOSER was designed for furnace pipe elbows. The faces are adjustable for loose or tight seams. The upper roll is depressed by means of foot treadle attachment. Lower face about 7 inches diameter; upper, 4 inches diameter. Extra pair of faces can be furnished for stove pipe elbows from 4 to 7 inches diameter.

	Code Word.	Shipping Weight.	Price.
No. 3 Elbow Turner, for hand, with treadle attachment.....	Recort	40 lbs.	$22.00
No. 4 " Closer, " " " "	Recoul	75 "	25.00
Large " " " " " "	Recouch	175 "	50.00
T. Pulley to Turning and No. 4 Closing Machines..... extra,	Recoup	.....	3.00
" Large Closer..... "	Recova	.....	4.00

NIAGARA CURVED SHEARS.



These Shears were designed for cutting sections for stove-pipe elbows and other irregular shapes.

Knives for cutting curves or irregular lines are preferable to dies, because they are cheaper and more easily ground and kept in order.

Our Curved Shears have V-shaped slides and guides, thus making the cutter bar work as accurately as any press. We make them either for foot or belt power.

The Power Curved Shears are arranged substantially the same as our Power Squaring Shears, having an automatic clutch, whereby the machine makes but one cut and then stops to give time to arrange the sheet for the next cut.

	Code Word.	Shipping Weight.	Price.
20-inch Niagara Foot Curved Shear	Recover	400 lbs.	$ 40.00
25 " " " " "	Recozer	540 "	45 00
30 " " " " "	Recran	630 "	52.50
36 " " " " "	Recriaba	700 "	75.00
42 " " " " "	Redacto	920 "	100.00
20 " " Power " "	Redada	750 "	125.00
25 " " " " "	Redard	900 "	130.00
30 " " " " "	Recross	1200 "	140.00
36 " " " " "	Recruit	1350 "	160 00
42 " " " " "	Recteur	1700 "	185.00

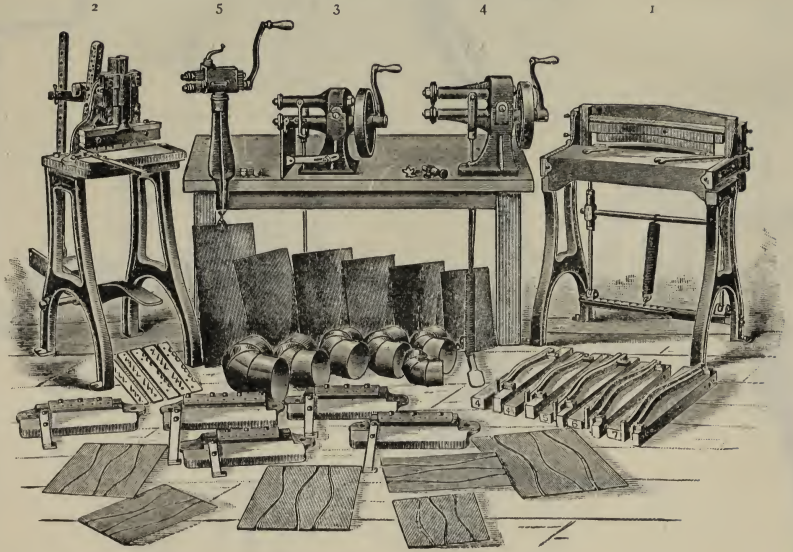
The price of the shears does not include knives.

PRICES OF CURVED KNIVES AND BLOCKS.

For Elbows	2-inch	2½-inch	3-inch	3½-inch	4-inch
Code Word	Rectify	Recto	Rectors	Recudis	Recure
Per Set	$24.00	$26.00	$27.00	$30.00	$32.00
For Elbows	4½-inch	5-inch	5½-inch	6-inch	7-inch
Code Word	Recurve	Recuser	Recutio	Redact	Redbud
Per Set	$34.00	$36.00	$38.00	$40.00	$42.00
For Elbows	8-inch	9 inch	10-inch	11-inch	12-inch
Code Word	Redcoat	Redeem	Redek	Redelust	Rederar
Per Set	$45.00	$50.00	$55.00	$62.00	$70.00

The above are prices of knives for 4-pieced elbows. See Elbow Outfit, page 49.

OUTFIT FOR MAKING PIECED ELBOWS.

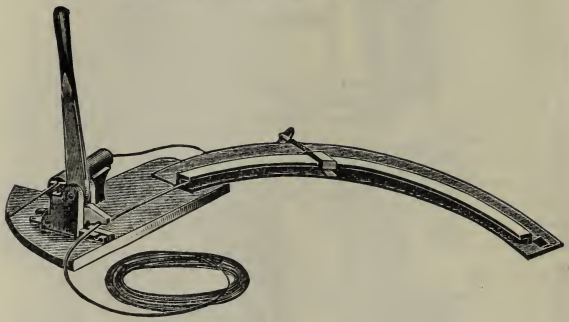


MILLER'S WIRE BAIL FORMER.

For forming hooks on wire bails for pails, etc.

	Code Word.	Net Weight.	
Miller's Wire Bail Former,	Redesire.	2 lbs.	$1.50

WIRE CUTTER AND BAIL FORMER.



A durable and labor-saving tool. It takes wire from the coil, and gauges and cuts it to the desired length. It cuts smoothly and easily ¼-inch wire, as well as all smaller sizes. Gauging capacity, 2 to 60 inches.

The illustration shows the bail partly formed, with the handle in position.

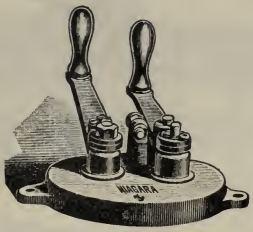
	Code Word.	Shipping Weight.	
Wire Cutter and Bail Former	Redeton.	50 lbs.	$10.00
Extra Cutter			1.00

WIRE SPRING AND RING FORMER.

Intended for coiling wire.

	Code Word.	Net Weight.	
Wire Ring Former, length 13 inch., diam. ¾, 1 and 1½ inch.	Redicho.	12 lbs.	$3.00

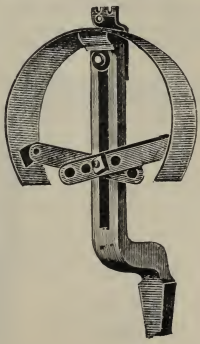
NIAGARA OVAL HANDLE FORMER—Adjustable.



Forming pieces are furnished of ½ and ⅝ inch radius. The length measured inside is adjustable from 3 to 3¾ inches.

	Code Word.	Net Weight.	
Niagara Oval Handle Former.....	Redigir.	7 lbs.	$3.00

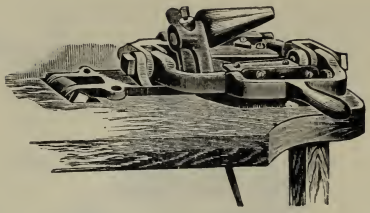
WASH BOILER BODY FORMER.

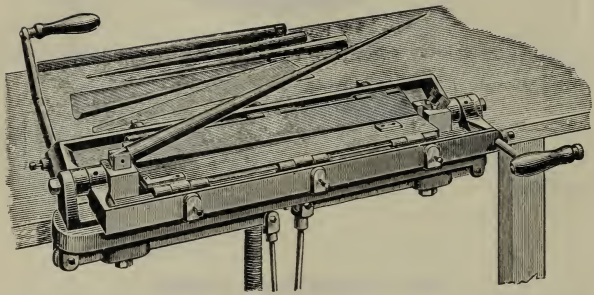


This is a handy tool for forming wash boiler bodies of various sizes.

Wash Boiler Body Former..... $3.50

NIAGARA TUBE FORMERS.





These machines are well finished and accurately fitted. Straight or taper tubes, with lap, butt or lock seam can be made of tin plate, brass or light sheet iron. If tubes have lock seam, the edges are turned previously on a Folder The rods or mandrels are made of steel.

Thin tubes it is necessary to form to U shape first with the breaker and complete them at next operation.

At prices named each Tube Former is furnished for straight tubes of a given diameter. Tubes of other diameters can be made on the same machine by using additional mandrels and rod beds.

2½-inch	Niagara	Tube	Former	.....										$ 20.00
5	"	"	"	.....										25.00
6	"	"	"	.....										27.00
8	"	"	"	.....										30.00
11	"	"	"	.....										35.00
15	"	"	"	.....	for tubes	¾	to	1½	inch.	diam.	.....			40 00
15	"	"	"	with breaker,	"	½	"	⅝	"	"	.....			45.00
20	"	"	"	.....	"	⅞	"	1½	"	"	....			50.00
20	"	"	"	with breaker,	"	½	"	¾	"	"	.....			55.00
24	"	"	"	.....	"	⅞	"	1½	"	"	.....			60.00
24	"	"	"	with breaker,	"	½	"	¾	"	"	.....			65.00
30	"	"	"	.....	"	1	"	2	"	"	....			75.00
30	"	"	"	with breaker,	"	⅝	"	⅞	"	"	.....			85.00
36	"	"	"	.....	"	1¼	"	2	"	"	.....			100.00
36	"	"	"	with breaker,	"	¾	"	1⅛	"	"	.....			115.00

Prices of extra and special Rods and Beds on receipt of specification.

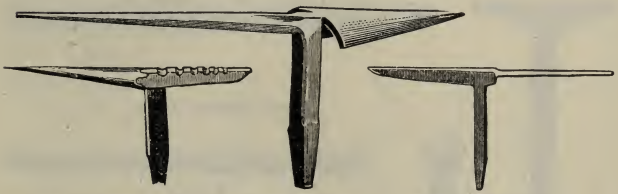
TINNERS' STAKES.

WROUGHT IRON WITH STEEL FACES.

Candle Mould Stake.

Bleakhorn Stake.

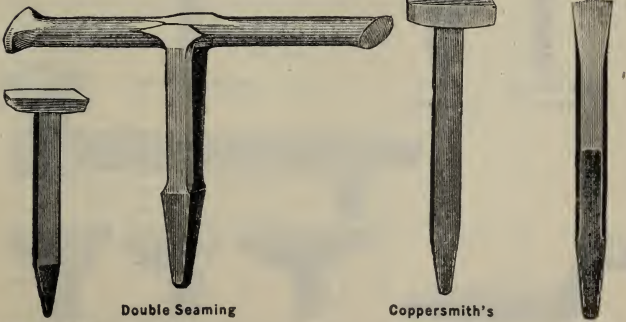
Bevel-Edged Square Stake.



Creasing Stake with Horn.

Blowhorn Stake.

Needle Case Stake.



Square Stake.

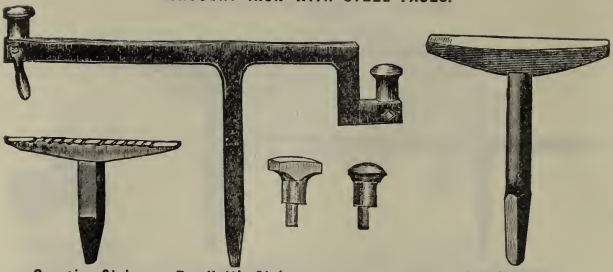
Double Seaming Stake.

Coppersmith's Square Stake.

Bottom Stake.

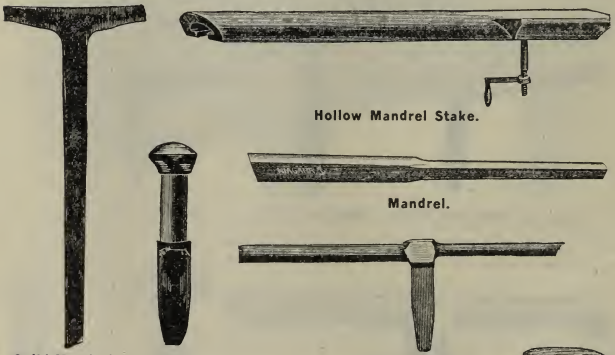
TINNERS' STAKES.

WROUGHT IRON WITH STEEL FACES.



Creasing Stake. Tea Kettle Stake. Hatchet Stake.

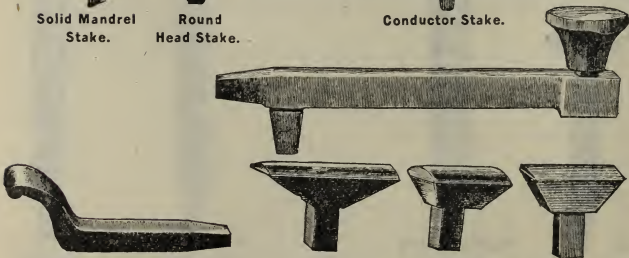
CAST IRON WITH POLISHED FACES.



Hollow Mandrel Stake.

Mandrel.

Solid Mandrel Stake. Round Head Stake. Conductor Stake.



Bath Tub Stake. Double Seaming Stake, with 4 Heads.

TINNERS' STAKES.

WROUGHT IRON WITH STEEL FACES.

	Net Weight.	
No. 1 Bleakhorn	49 lbs.	$15.00
No. 2 "	40 "	13.25
No. 4 "	34 "	10.00
No. 1 Double Seaming, large end 17 inches, small end 12 inches	39 "	9.00
No. 2 " " both ends, 11 inches	32 "	8.00
No. 0 Conductor, both ends 14 inches long, 1⅞ and 1⅜ inches diam.	24 "	6.00
No. 00 " long end 2 x 20 inches, short end 1½ x 14 inches	34 "	7.00
No. 1 Bevel-edged Square, face 3 x 5 inches	13 "	6.00
No. 2 " " " 2½ x 4½ inches	12 "	5.00
Blowhorn, large end 9 inches, small end 17½ inches	14 "	5.00
Creasing, with horn, round end 9½ inches, flat end 6½ inches	13 "	4.50
Common Creasing, 14¾ inches long	13 "	4.00
Coppersmith's Square, face 2⅝ x 4½ inches	11 "	3.50
Common Square, face 2⅝ x 4½ inches	11 "	3.00
Large Square, face 3⅜ x 5½ inches	15 "	7.00
Small Square, face 2⅜ x 1½ inches	4 "	2.00
Candle Mould, small end 18 inches, horn 8½ inches	8 "	2.75
Needle Case, flat end 8 inches, small end 10½ inches	5 "	2.25
Tea Kettle, with four keads	50 "	15.75
Heads for Tea Kettle		1.75

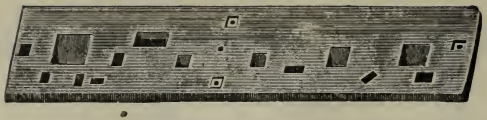
Hatchet	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Net Weight	14 lbs.	11 lbs.	9 lbs.	7 lbs.	5 lbs.	4 lbs.
Length of Blade	16 ins.	14½ ins.	13 ins.	11 ins.	9 ins.	7 ins.
Price	$5.00	$4.25	$3.50	$2.75	$2.25	$1.75

Bottom	No. 1	No. 2	No. 3	No. 4
Width	1¾ ins.	1½ ins.	1¼ ins.	1 in.
Price	$1.00	$ .80	$ .75	$ .50

CAST IRON WITH POLISHED FACES.

No. 1 Conductor, turned, large end 2¼ x 15 in., small end 1¼ x 11½ in.	30 lbs.	$ 4.00
No. 2 " " " " 1¾ x 14 " " " 1¼ x 10 "	23 "	3.00
No. 00 Solid Mandrel, 60 inches long to the standard	133 "	10.00
No. 0 " " 40 " " " " "	83 "	6.00
No. 1 " " 34 " " " " "	60 "	5.00
No. 2 " " 30 " " " " "	40 "	4.00
No. 2½ " " 30 " " " " for 2-inch pipe	40 "	4.00
No. 3 " " 27 " " " " "	30 "	3.00
Round Head	10 "	1.25
Bath Tub	12 "	1.25
Double Seaming, with four heads	100 "	9.00
Extra Heads for Double-Seaming Stake with four heads		1.50
No. 000 Hollow Mandrel, 36 inches entire length, 3 inches diameter,	30 "	5.00
No. 0 " " 40 " " " 4 " "	53 "	5.50
No. 00 " " 60 " " " 4⅞ " "	94 "	10.00
Extra " " 48 " " " 11¾ " "		
flat part 15 inches wide	300 "	25.00
Hollow Mandrel Fasteners		.60
No. 12 Mandrel Stake, rounded part 26 in. long, entire length 44½ in.	52 "	5.00

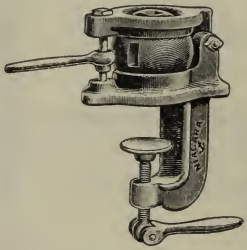
BENCH PLATES.



Bench Plates with polished surface adapted for screwing to a bench and holding Stakes and Bench Shears.

	Code Word.	Net Weight.	Price.
No. 0 Bench Plate, 48 x 12 inches.....	Redoblo	60 lbs.	$9.00
No. 1 " " 37 x 8 "	Redolebit	50 "	5.00
No. 2 " " 30 x 8 "	Redoma	35 "	3.00

BENCH SHEAR HOLDER.



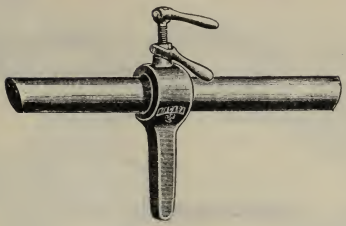
This Holder is fastened to the bench like machine standards, and the Bench Shear can be held in any position and at any desired angle.

	Code Word.	Weight.	
Niagara Bench Shear Holder.....	Redondo.	16 lbs.	$3.00

STRAIGHT EDGE — STEEL.

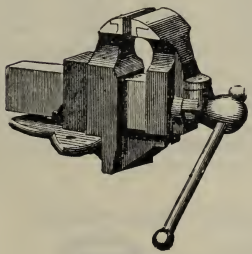
8 feet long, 2¼ x ¼ inch, beveled edge (Code Word, Redopelo),..... $4.50

NIAGARA STAKE HOLDER.

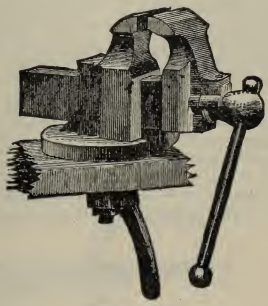


Niagara Stake Holder will hold stakes up to 2½ in. diam. (Code Word, Redopt), $2.75
Conductor Stake, Steel, 1¼ inch. diam., working length 14 inches..... 1.75
" " " 1¾ " " " " 14 " 2.25
" " " 2¼ " " " " 20 " 3.50
Double Seaming and Conductor Stake comb., length 26 in., diam. 1¾ in., one head, 4.50

PARALLEL BENCH VISES.



Fixed Vise.



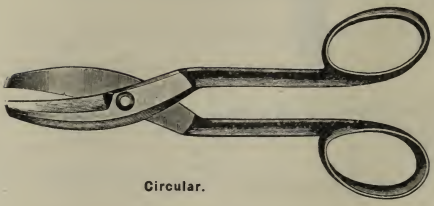
Swivel Vise.

No.	Length of Jaws.	Fixed.			Swivel.		
		Code Word.	Weight.	Price.	Code Word.	Weight.	Price.
0	3 inch.	Redores	26 lbs.	$ 6.00	Redraft	31½ lbs.	$ 7.50
1	3½ "	Redorn	32 "	7.00	Redraw	38½ "	8.75
2	4 "	Redouble	44 "	8.50	Redress	49 "	10.50
3	4½ "	Redouca	54 "	10.00	Redrojo	61 "	12.50
4	5 "	Redout	105 "	13.00	Redselig	115 "	16.00

NIAGARA SNIPS OR HAND SHEARS — FORGED.

(Warranted.)

Straight.



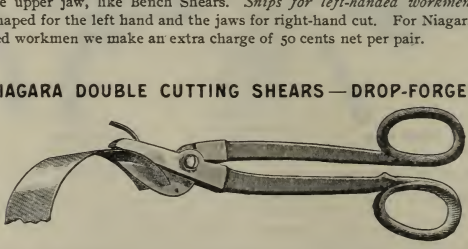
Circular.

These Snips are drop-forged of steel, and the jaws are laid with high grade cast steel, properly hardened. The finish is strictly first-class.

Nos.	6½	7	8	9	10
Net Weight	52 oz.	43 oz.	32 oz.	26 oz.	18 oz.
Will Cut	4½ in.	4 in.	3½ in.	3 in.	2½ in.
Code Word	Redster	Reduce	Reduit	Reduvio	Redwan
Niagara Straight Snips.....per pair,	$3.00	$2.50	$2.00	$1.50	$1.40
Code Word	Reeders	Reefing	Reefs	Reeksen	Reenter
Niagara Circular Snips.....per pair,	$4.25	$3.50	$3.00	$2.50	$2.25

We make the Niagara Straight Snips in three styles. *Left Hand Snips*, the ordinary kind, have the handles shaped for the right hand, and they cut at the left side of the upper jaw. These are shown above, and will be sent unless ortherwise ordered. *Right Hand Snips* also have the handles shaped for the right hand, but they cut at the right side of the upper jaw, like Bench Shears. *Snips for left-handed workmen* have the handles shaped for the left hand and the jaws for right-hand cut. For Niagara Snips for left-handed workmen we make an extra charge of 50 cents net per pair.

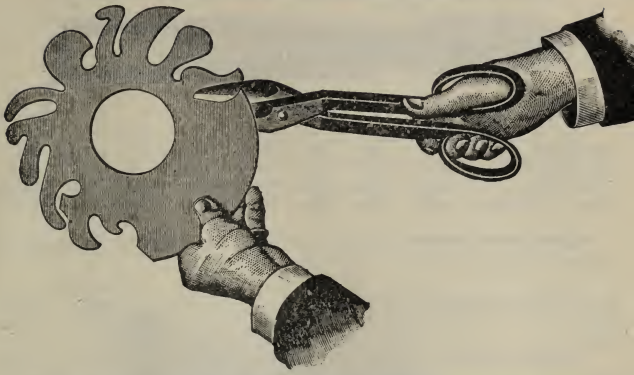
NIAGARA DOUBLE CUTTING SHEARS — DROP-FORGED.



These Shears are drop-forged of refined iron. The center blade is of solid tool steel and the outer jaw is steel-laid. They will cut apart cylinders of sheet metal, such as stove-pipe, without leaving ragged edges. Also very useful for cutting holes in sheets and cutting off the bottoms of cans, pails, etc., and other work. The center blade is pointed to be readily inserted into the metal, to start the cut. Total length, 13½ inches.

Niagara Double Cutting Shears, net weight 2½ lbs..... (Code Word, Reenvite) $3.00

BUFFALO SNIPS — FOR CURVES AND STRAIGHT CUTS.

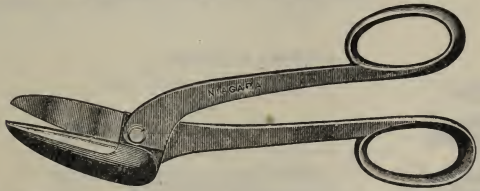


These Snips will cut curves, scrolls and irregular shapes, besides being adapted to the same class of work as the ordinary straight Snips. The jaws are *not* bent, like those of Circular Snips. They are shaped in a peculiar manner to allow the material to pass freely when cutting curves, or changing the direction of the cut. The Buffalo Snips are drop-forged of steel and laid with best cast steel, properly hardened.

	Code Word.	Net Weight	Price.
No. 17 Buffalo Snips, 4-inch cut.....	Reepoot	43 ozs.	$2.50
No. 18 " " 3½ "	Refajo	32 "	2.00
No. 19 " " 3 "	Referat	23 "	1.50

Buffalo Circle Snips, with bent jaws, can be furnished at $1.00 extra to list price.

NIAGARA HAND SLITTING SHEARS.



These Shears are distinguished from ordinary Tinners' Shears through the peculiar shape and arrangement of the jaws and handles. The lower jaw is relieved to allow the material to slide backwards freely. Both of the handles remain above the work while cutting. A sheet of any length can be cut apart without trouble and injury to the hands of the operator.

These Shears are especially adapted to cutting corrugated sheets lengthwise, which cannot be done with ordinary Snips. They are forged of solid steel, and the jaws are laid with best cast steel, carefully tempered. Total length 13½ inches.

	Code Word	Net Weight.	
Niagara Hand Slitting Shears, 3-inch cut.....	Referm	3¼ lbs,	$3.00

NIAGARA BENCH SHEARS.

Nos.	00	0	1	2	3	4	5	6
Net Weight.....lbs.	41	27½	21	16½	14½	10	7½	6½
Will cut.....inches,	12	10½	9	8⅝	8⅜	8	7	6
Code Word.....	Refertos	Refigure	Refill	Refilon	Refinado	Refind	Refix	Reflabar
Price.....each,	$13.50	$12.00	$8.00	$7.00	$6.00	$5.00	$4.00	$3.50

ELBOW BENCH SHEARS.—The jaws are rounded similar to Buffalo Snips, page 73, to permit of cutting curves and irregular shapes.

	Code Word	
No. A Elbow Bench Shears, cut 4 inches.....	Reflare	$ 5.25
No. B " " " extra heavy, cut 6 inches.....	Reflect	12.00
No. C " " " double extra heavy, cut 7½ inches, entire length 46 inches.....	Reflesso.	25.00

RIVETING AND SETTING HAMMERS—BRIGHT.

Riveting Hammer.

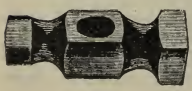
Setting Hammer.

Nos.	0	1	2	3	4	5
Size of face.....inches,	1½	1⅛	1	⅞	¾	⅝
Riveting Hammers, handled.....per doz.	$15 50	$9.75	$8.31	$6.75	$5.31	$4.75
" " " .....each,	1.30	.82	.70	.57	.45	.40
Setting " " .....per doz.		9.75	8.31	6.75	5.31	4.75
" " " .....each,		.82	.70	.57	.45	.40

RAISING HAMMERS.

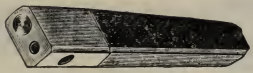
Nos.	1	2	3	4
Weight,	4½	3	2¼	1¼ lbs.
Raising Hammers.....each,	$2.25	$1.75	$1.25	$ .75
Handles, extra.....per doz.				1.25

PLANISHING HAMMERS.



Planishing Hammers.....per lb. $1.00

RIVET SETS AND HEADERS.



Nos.....	00	0	1	2	3	4	5	6	7	8
Size of Hole.....	$\frac{5}{16}$	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{3}{16}$	$\frac{11}{64}$	$\frac{5}{32}$	$\frac{9}{64}$	$\frac{1}{8}$	$\frac{7}{64}$-inch
For Iron Rivets,	14	10 & 12	8	6	4 & 5	2½ & 3	1¾ & 2	1½	1¼ lb.	10 & 12 oz.
Rivet Sets and Headers, each	75c.	75c.	63c.	63c.	50c.	50c.	37c.	37c.	32c.	32c.

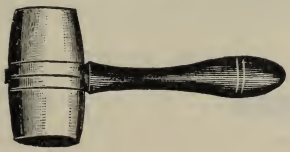
GROOVING TOOLS.

Nos.....	00	0	1	2	3	4	5	6	7	8
Sizes.....	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{3}{8}$	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{3}{16}$	$\frac{5}{32}$	$\frac{9}{64}$	$\frac{1}{8}$-in.
Grooving Tools...each	75c.	75c.	63c.	63c.	50c.	50c.	37c.	37c.	25c.	25c.

SCRATCH AWLS.

Per dozen..... $1.50

TINNERS' MALLETS.



Tinners' Mallets, best seasoned hickory, assorted, from 2 to 3 inches.....per doz. $1.50
" " " " " 3 inches..... " 1.75
" " " " " 4 " ..... " 2.50

HOLLOW PUNCHES—SOLID FORGED.

Hollow Punches, all sizes to and including 1¾-inch diam., round.....per inch, $1.00
" " above 1¾-inch diameter..... " 1.25
Set of Hollow Punches, one each, ½, ¾, 1, 1½, 1¾ inch..... per set, 5.50

The above prices are for regular sizes from ¼ to 3 inches diameter, varying by ⅛ inch, which are carried in stock. Other sizes can be made to order, at special prices.

SPRING CENTER HOLLOW PUNCHES.

Holes can be located accurately in a sheet by punching a prick hole for the center.
Spring Center Hollow Punches up to 1¾-inch diameter.....per inch, $1.25
" " " " above 1¾ " " ..... " 1.50

The above prices are for the standard sizes, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1½, 1¾ and 2 inches. Other sizes can be made to order, at special prices.

SOLID PUNCHES.

Nos.	0	1	2	3	4	5	6	7	8
Size of hole .....inches,	3/32	1/4	5/32	3/16	7/32	9/32	11/64	1/8	7/64

Set of Solid Punches (4 punches, 2 chisels).....per set $ .72
Solid Punches, cast steel, Nos. 0, 1, 2, 3, 4, 5, 6, 7, 8 and prick.....each, $ .12

WIRE CHISELS.

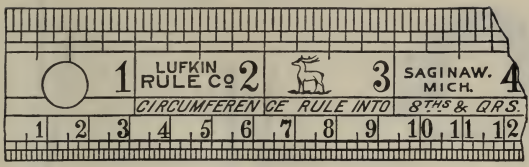
Wire Chisel.

Lantern Chisel.

Size.....inches,	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Wire Chisels, each,	8c.	9c.	10c.	11c.	12c.	13c.	14c.	15c.	17c.	19c.	20c.	24c.	29c.

Lantern Chisels, common size.....each, 12c.

STEEL CIRCUMFERENCE RULES.



The Circumference Rule is a very useful tool for obtaining circumferences of circles by simply measuring the diameters. As shown in the cut, the top edge is graduated with sixteenths of inches. The bottom edge with what, for convenience, is called "circumference inches," divided into eighths. The divisions of this edge, compared with the opposite edge, bear the same ratio inversely to each other as the diameter of a circle to its circumference. Therefore, opposite the first inch on top edge is read on the lower edge 3 and the fraction representing 0.1416 inches. Its use will readily be appreciated by tinners and other sheet-metal workers, for whom it is particularly adapted.

The reverse side gives the following useful table of measurement :

Liquid Measure—Flaring	¼ pint to 5 gallons
Dry Measure—Flaring	¼ bushel to 2 bushels
" —Straight	1 quart to 3 bushels
Cans—Pitched Top	1 gallon to 10 gallons
" —Flat Top	1 gallon to 200 gallons

Steel Circumference Rule, 36 inches long, plain	each,	$2.50
" " " " nickeled	"	3.00

SOLDERING COPPERS.

With square points for common use. With flat points for bottoms. Hatchet Coppers for canners' and plumbers' use. Weights, 1, 1½, 2, 2½, 3, 4, 5, 6, 7, 8, 9, 10, 12 lbs. per pair.

Tinners' Soldering Coppers	per lb.	$
Hatchet " "	"	
Soldering Copper Handles, wire ferrule	per doz.	$ .75

WIRE GAUGES—ENGLISH STANDARD.

No. 1 Wire Gauge, cast steel, round, Nos. 0 to 36.	per doz.	$24.00
No. 2 " " " " " " 6 " 36	"	15.00

TINNERS' STEEL SQUARES.

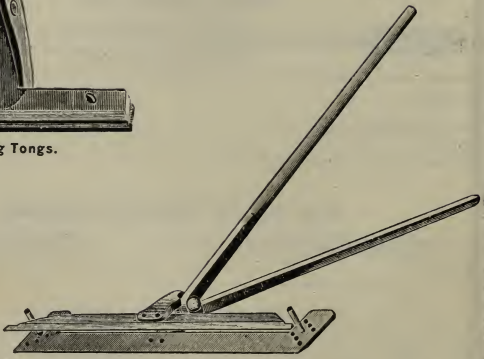
No.	Width.	Name.	Description.	Per Doz.
3.	2 in	Sup. Sup. Extra	$\frac{1}{16}$, $\frac{1}{12}$, $\frac{1}{8}$, $\frac{1}{4}$, board and brace measure	$27.50

Hand Double Seamer.

Gutter Tongs.

Deep Throat
Roofing Tongs.

Roofing Tongs.



Adjustable Roofing Tongs.

ROOFING TONGS—STEEL.

Steel Roofing Tongs, sizes ½, ¾, 1, 1¼, 1½, 1¾ and 2 inches; length of blades, 18 inches; net weight about 17 lbs. per set.....per set of two pairs, $6.00

Please state sizes wanted.

	Code Word.
Set of 1 and 1¼-inch Tongs (common gauge).....	Reflet
" 1¼ and 1½-inch Tongs (wide gauge).....	Reflexif

ADJUSTABLE ROOFING TONGS.

These Tongs will do the same work as six of the ordinary Roofing Tongs, while their price is but a trifle higher.

The adjustment is made by removing the pins shown on each side of the tongs, and screwing them into the proper holes corresponding with the size of standing-roof seam to be produced.

One pair of Tongs will fold edges of ½, ¾, 1, 1¼, 1½ and 2 inches.

	Code Wd.	Net Wght.	
Adjustable Roofing Tongs, length of blades 18 inches, per pair,	Refloat	8½ lbs.	$4.00

GUTTER TONGS.

	Code Wd.	Net Wght.	
Gutter Tongs, length of blades 14 in., depth of throat 12 in., each,	Reflux	8 lbs.	$4.00

DEEP THROAT ROOFING TONGS.

These Tongs are adjustable from ½-inch to 10 inches, varying by ½ inch. Two steel pins, which are screwed into holes the desired distance from the edge, serve as gauges. No measuring is required, the distance being marked on the frame. Length of blades 15 inches.

	Code Wd.	Net Wght.	
Deep Throat Roofing Tongs, adjustable.....per pair,	Refogar	11 lbs.	$5.00

HAND ROOFING DOUBLE SEAMERS.

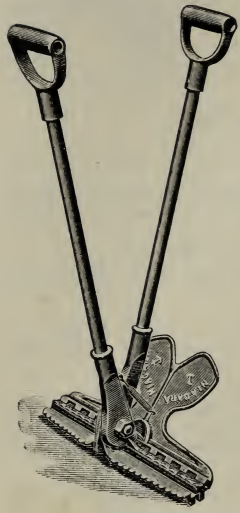
Hand Roofing Double Seamers, to match tongs, net weight about 18 lbs. per set, Per set of two pairs..... $1.75

Please state size wanted.

WOOD ROOFING FOLDERS.

	Code Word.	Net Weight.	Price.
Common Wood Roofing Folders, for 14-inch tin.....	Refond	4½ lbs.	$2.50
" " " " " 20 " "	Reform	7 "	2.50
" " " " " 28 " "	Refossos	12 "	3.50
Improved " " " 20-inch, with gauge.....	Regnat	7½ "	3.50
" " " " 30 " " " ...	Regoado	15 "	5.00

BURRITT'S ROOFING DOUBLE SEAMERS—IMPROVED.



Similar Seamers have been known to tinsmiths and roofers for many years. By reconstructing them on mechanical principles we have succeeded in making the Seamers work easier and better.

The Improved Seamers are so made as to bend the edge down further than at right angle, to facilitate the closing down operation. The Seamers do not crimp the tin, leaving the locks of uniform height

They will double seam hips and ridges with ease, and seaming can be done much faster, easier and better than by hand and mallet

The Seamers are fitted for I C tin, unless specially ordered for I X tin, in which case they will be made to follow 1¼ and 1½-inch tongs.

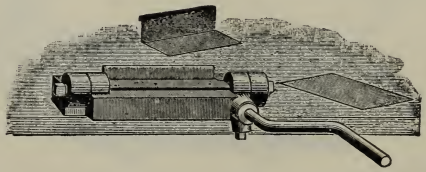
Common Gauge Seamers follow 1 and 1¼-inch tongs, finished seam ¾-inch high.

Wide Gauge Seamers follow 1¼ and 1½-inch tongs, finished seam 1 inch high.

Burritt's Roofing Double Seamers—Improved, weight 40 lbs.....per set (2 pairs), $18.00

When ordering, mention if Common (Code Word, Regost), or Wide Gauge (Code Word, Regrada) Seamers are wanted.

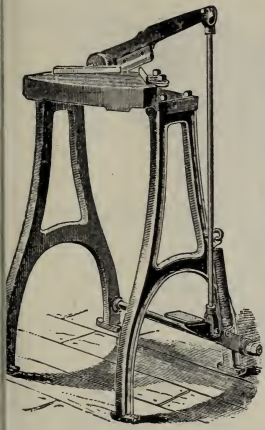
NIAGARA CLEAT FORMERS.



These are most serviceable tools for roofers in making standing seam roofing. They will form a cleat complete, as illustrated, from a piece of tin at one operation, a boy being capable of folding 8,000 cleats per day in an accurate manner. Every roofer ought to have one.

	Code Word.	
No. 1 Cleat Former will make 1-inch cleats, 4 inches long.....	Regral	$2.50
No. 2 " " " 1¼ and 1½-inch cleats, 2½ inches long	Regret	3.00
No. 3 " " " 1¼-inch cleats, 9 inches long.....	Regsam	4.50

CORNER NOTCHING MACHINE.

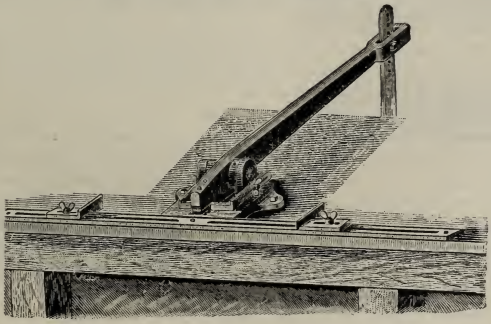


This machine is designed for cutting off the corners of roofing sheets, several sheets at a time, and for similar work. It has one fixed and one adjustable gauge, whereby the corners can be notched to any size required. The machine is worked by a treadle, allowing the operator to use both hands for handling the sheets of tin.

Corner Notcher, for use on bench, shipping weight 100 lbs. (Code Word, Regulado), $22.00

Corner Notcher, on iron legs, shipping weight 175 lbs....(Code Word, Regung) 26.00

No. 168 NOTCHING MACHINE.

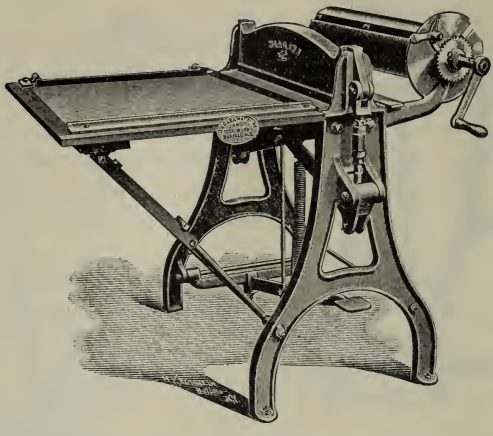


For notching the blanks of pieced ware for wiring or grooving, for cutting the corners and hinge notches of square boxes and cans, biscuit tins and other similar work. It is operated by a foot treadle and has adjustable gauges, so that notches of any length and width can be readily cut and all the pieces produced exactly alike

Several thicknesses of tin can be cut at one stroke.

No. 168 Notching Machine (Code Word, Rehacer)..... $30.00

NIAGARA CROSS-LOCK SEAMER.



This machine is intended for seaming together sheets of tin and rolling up the lengths ready to lay on the roof. It is simple, rapid and saves time and labor. The parts of the machine are so arranged that the operator can do the work conveniently.

All parts of this Seamer are constructed with a view to strength and rigidity. The pressing bar is operated by a powerful toggle movement, connected with foot treadle and the seam produced at one depression of the treadle is perfectly tight and uniform the entire length.

The table which supports the sheets carries two side gauges, one of which is stationary; the other gauge is backed by springs, which press the sheet against the stationary gauge. The distance between the gauges can be adjusted for 20-inch and 28-inch tin, or for other sizes by drilling additional holes in the table. The position of the sheets is also determined by means of spring pins, carried by the pressing bar. These pins move out of the way automatically when the bar is being depressed, and they drop down again when the bar goes up. The pins can be raised sufficiently to allow the first lock to pass through.

The reel in the rear of the machine, which is covered with sheet steel, is controlled by a ratchet and pawl. It can be turned both ways, according to the way that the operator may desire to wind up the sheets. Provision is made for soldering the seams before winding them on the reel. The rolls of tin can be removed without difficulty.

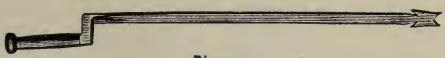
The drop table is hinged to the frame and supported by brackets. It can be lowered easily, so as to occupy the least possible space.

30-inch Niagara Cross-lock Seamer, with reel and drop table, shipping weight 500 lbs. (Code Word, Rehash)..... $45.00

SLATERS' TOOLS.

Hammer.

Stake.



Ripper.

The Hammers are forged from one solid piece of steel, finely polished and tempered, and the Ripper blade is cut from tool steel.

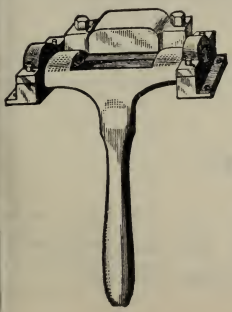
Slaters' Rippers	each,	$2.00
" Hammers	"	3.00
" Stake, not graduated	"	.75
Set of Slaters' Tools—Ripper, Hammer and Stake, (Code Word, Rehelm)	each,	5.50
Slaters' Stakes, graduated, 1 to 12 inches	"	1.25

SCAFFOLD BRACKET.

The cuts represent the Scaffold Bracket open and closed.

Slaters' Scaffold Brackets	each,	$ 2.50
" " "	per set of six	12.00

Ready for Plank.

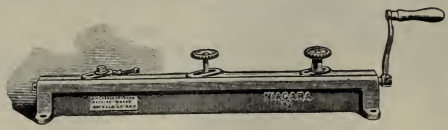


BRACE AND CLEAT BENDER.

Adapted to bending braces for "look-outs," gutters and leaders. It will bend any size up to ¼-inch by 1½-inch iron.

Brace and Cleat Bender for iron up to ¼ x 1½ inch (Code Word, Rehob)	$4.00
Brace and Cleat Bender for iron up to ¼ x 2 inches (Code Word, Rehogo)	5.00

NIAGARA ADJUSTABLE GUTTER BEADERS.



These Machines possess the advantage of being adjustable for rods of various sizes from ⅜ to ¾-inch diameter. After forming the bead the jaws can be opened quickly to facilitate removing the work and rod. Owing to this feature they are better adapted than the ordinary Gutter Beader to different thicknesses of material.

	Code Word.	Shipping Weight.	Price.
30-inch Niagara Adjustable Gutter Beader.....	Rehoyar	65 lbs.	$ 10.00
42 " " " " "	Rehurta	90 "	15.00
4-foot " " " "	Rehwild	110 "	18.00
6 " " " " "	Reibbar	210 "	30.00
8 " " " " "	Reiblein	335 "	45.00
10 " " " " "	Reich	400 "	60.00

The price includes one straight rod (state diameter wanted). Code Word includes ½-inch rod for 30 to 48-inch Beaders and ⅜ for 72 to 120-inch machines.

Prices of extra rods are given below.

GUTTER RODS—STEEL.

Length,	15 in.	20 in.	30 in.	36 in.	42 in.	4 ft.	5 ft.	6 ft.	8 ft.	10 ft.
Price...	$1.75	$2.00	$3.00	$4.00	$4.50	$5.00	$6.00	$7.50	$10.00	$12.50

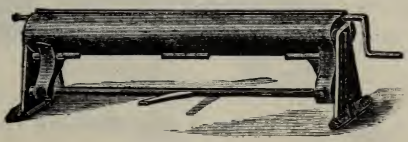
Gutter Beader Rods longer than 30 inches have handles at both ends.

IRON-BOTTOM GUTTER BEADERS.

	Code Word.	Net Weight.	Price.
15-inch Iron Bottom Gutter Beader with rod, ⅜ to ¾-inch,	Reideras	8 lbs.	$ 3.50
20 " " " " " " " ⅜ " ¾ "	Reidora	18 "	4.00
30 " " " " " " " ⅜ " ¾ "	Reifchen	24 "	6.00
42 " " " " " " " ½ " ⅞ "	Reifrock	48 "	9.00
60 " " " " " " " ½ " 1 "	Reifstab	100 "	20.00
96 " " " " " " "	Reigned	180 "	30.00
120 " " " " " " "	Reillere	220 "	40.00

Price includes one rod. State diameter wanted.

EXCELSIOR GUTTER BEADERS.



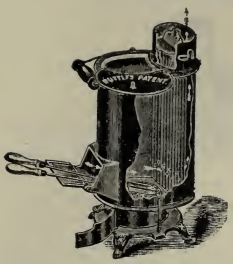
All Beaders longer than 30 inches have two handles (one of which is removable) to turn the rod on both ends, and thereby prevent twisting of same.

	Code Word.	Shipping Weight.	Price.
15-in. Excelsior Gutter Beader, with cast steel rod, $\frac{5}{16}$ to ½-in.	Reimao	23 lbs.	$ 4.50
20 " " " " " " " ⅜ " ¾ "	Reimoso	35 "	5.50
30 " " " " " " " ⅜ " 1 "	Reimpose	82 "	10.00
3-ft. " " " " " " ½ " 1 "	Reimwort	105 "	20.00
6 " " " " " " " ½ " 1 "	Reinado	210 "	35.00
8 " " " " " " " ½ " 1 "	Reincur	300 "	50.00
10 " " " " " " " ⅝ " 1 "	Reine	400 "	70.00

The price includes one rod. State diameter wanted.

Code Word includes ½-inch rod for 15 to 60-inch Beader, and ⅝-inch rod for larger machines

BUTTLE'S CHARCOAL FIRE POT.



This is the only base-burning tinner's stove with double damper and reversible flue. It is the most economical and sightly stove on the market. Each pot is nicely japanned.

In starting the fire, the front door is opened; after the fire is well started, the front damper is closed and the back damper is opened. This causes a downward draught directly on the soldering copper, thus creating the densest heat where it is most required, and, as a consequence, there is not only a great saving of fuel, but the soldering coppers are heated much more rapidly than in any other tinner's stove.

Height, 16¾ inches; opening, 3¾ x 2¼ inches.

Buttle's Charcoal Fire Pot, shipping weight 16 lbs. (Code Word, Reinlich)..... $2.25

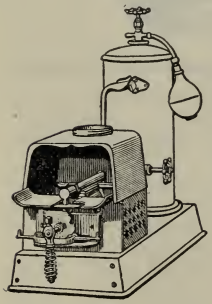
CAST IRON FIRE POT.

Brick-Lined.

This Fire Pot is a universal favorite with tinners. It is lined with fire brick and made in a substantial manner. The draft door is in two sections, which economizes fuel.

Height, 13½ inches; opening, 4 x 2 inches.

Cast Iron Fire Pot, brick-lined, shipping weight 30 lbs. (Code Word, Reinol)..... $2.50



No. 3 GEM GASOLINE FURNACE.

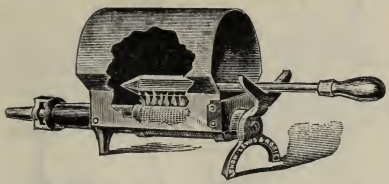
The slotted burner is made of cast iron, recessed in front and back, which insures durability. The solder from the soldering coppers cannot fall into the perforations. They are noiseless, odorless and powerful heaters. The heat is distributed the full length of the coppers. The aperture in the hood is of sufficient size to admit the largest size coppers, which can be heated in a short time. The Fire-proof Pneumatic Reservoir cannot be filled while burners are lighted.

An improved drip cup is provided, which generates the gas without smoke or smell.

Every furnace is guaranteed to be worked out-of-doors or on roofs in all kinds of weather.

	Code Word.	Shipping Weight.	
No. 3 Gem, tin reservoir.....	Reinsert	20 lbs.	$7.00
" " copper reservoir.....	Reisbau		8.50
Plumbers' Hood.....		extra,	.50
" Pot.....		"	.50

EXCELSIOR GAS FURNACE.

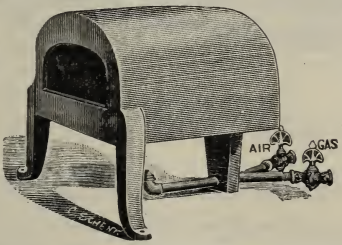


For heating soldering bits for tinners, plumbers, etc. This heater has been in the market for a number of years, and its constantly increasing sales afford the best proof of the esteem in which it is held. It has come to be regarded by tinsmiths as the standard heater for gaseous fuel, and has done much to bring the merits of gas into notice as an aid in the workshop.

Maximum consumption of gas, 10 feet per hour.

Excelsior Soldering Furnace (Code Word, Reisblad)..... $1.75

GAS PRESSURE FIRE POT.



The Gas Pressure Fire Pot represented is in extensive use, and gives best satisfaction. It has the following advantages:

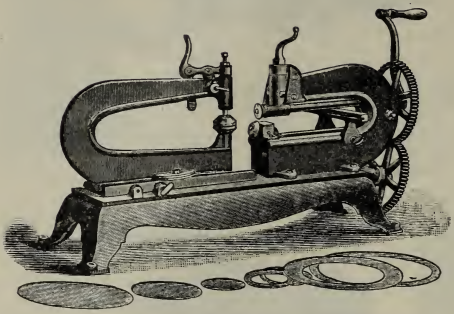
ECONOMY—Saving in insurance, there being no danger of the building catching fire. No time is lost in starting, and an ordinary copper can be heated ready for use in four minutes.

CLEANLINESS—It causes no smoke, dust or ashes.

It burns the ordinary illuminating gas. Steam or other power is required to drive the blower connected with it. One of the stopcocks is to be connected with the gas service pipe, the other to a tin tube leading from the blower. The supply of gas and air should be regulated by the cocks so as to produce a blue flame.

	Code Word.	Net Weight.	Price.
Gas Pressure Fire Pot	Reisbrot	18 lbs.	$ 2.25
Small Blower, sufficient for 4 Fire Pots	Reisbund	.....	8.00
Blower, sufficient for 30 Fire Pots	Reisegeld	.....	15.00

No. 11 NIAGARA RING AND CIRCLE SHEARS.

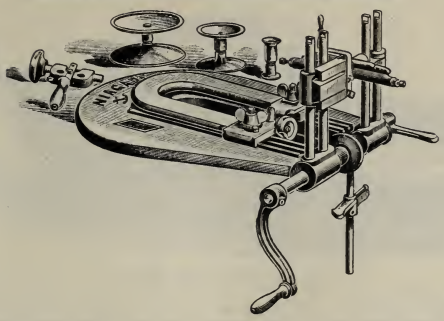


For No. 22 Iron and lighter.

This machine is found serviceable for a variety of purposes. It is suitable for cutting internal circles or holes without cutting through the edge of the sheet, besides outside cutting, the same as ordinary Circle Shears. It will cut external and internal circles from 3½ to 15 inches diameter, and holes in round blanks up to 22 inches diameter and in square blanks up to 15 x 15 inches.

	Code Word.	Shipping Weight.	
No. 11 Niagara Ring and Circle Shears for hand.....	Reisehut	185 lbs.	$32.00
No. 11 " " " " " " belt power..	Reisern	220 "	44.00
Cutters.....per pair,	Reisete		5.00

BUFFALO CIRCLE SHEARS AND EDGER.



This machine was designed to take the place of the old style Flander's and Savage's Shears, combining the advantages of both. It will cut circles of any size from 2½ to 23 inches diameter, of tin or light sheet metal. No. 26 gauge can be cut, provided the circles are not less than 3½ inches diameter. Smaller circles, down to 2½ inches, can be cut of No. 28 gauge or lighter.

The **EDGE TURNER** permits of flanging circles from 3 to 11 inches diameter. The edge can be turned at right angle. An extra pair of clamping disks is required for each diameter to be edged.

The **BURRING ATTACHMENT** allows of turning an edge on circles from 5 to 22 inches diameter, beyond the right angle, without using special clamping disks for each diameter.

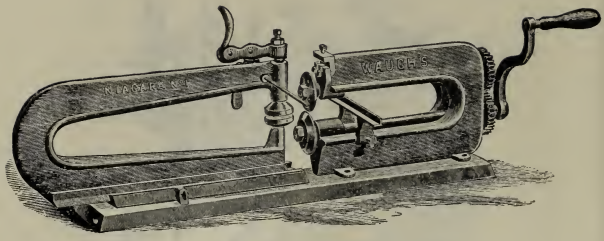
After cutting the circles they are flanged by means of the Edge Turner or Burring Attachment, at the same setting. The flange can be up $\frac{3}{16}$ inch high. The entire circumference is cut at one turn of the crank handle.

A yoke unites both cutter stocks, that, when once adjusted, the cutters do not require to be re-adjusted for circles of different diameters. The clamping of the sheet is done by means of an eccentric lever which gives more positive and uniform pressure than the treadle attachment used formerly.

There is a graduated scale marked on the frame to facilitate setting the cutters according to the diameter wanted, and a gauge permits of centering the blank properly.

	Code Word.	Shipping Weight.	Price.
Buffalo Circle Shears and Edger, with 4 pairs of disks, 1⅞, 3, 4¾, 7½ inches diameter, including Burring Attachment and Edge Turner	Reislauf	145 lbs.	$35.00
Buffalo Circle Shears with Edge Turner only	Reispet	.....	30.00
" " " " Burring Attachment only	Reisplan	.....	30.00
" " " " for cutting only	Reisje	.....	25.00
If on iron legs, extra,	.....	.....	7.50
Extra clamping disks not over 8-inch diam., per pair,	.....	.....	2.00
Cutters, "	.....	.....	3.00

NIAGARA WAUGH'S CIRCLE SHEARS.



For No. 22 Iron and lighter.

They will cut round disks of sheet metal, and can also be used for straight and irregular cutting. The cutters are always set ready for use, and each machine is provided with a rim and slitting gauge.

On our Waugh's Shears the clamp plate is set down by an eccentric lever in place of the old-style crank screw. Can be furnished with special cutters to cut pasteboard, etc.

	Code Word.	Weight.	Will Circle.	Depth of Cutting Head.	Price.
No. 1 Niagara Waugh's Circle Shears,	Reissaus	90 lbs.	3 to 15 in.	9 in.	$33.00
No. 2 " " " "	Reissue	95 "	3 " 20 "	9 "	38.00
No. 3 " " " "	Reitgaul	275 "	3½ " 41 "	9 "	55.00
No. 4 " " " "	Reithose	310 "	3½ " 48 "	9 "	65.00
No. 5 " " " "	Reitochs	410 "	" 48 "	12 "	80.00

No. 5 will cut circles 4 inches diameter of No. 20 iron by using clamping disk with center, to prevent drawing. Without center the smallest circle is 6 inches.

Extra Cutters for Nos. 1 to 4 .....per pair, $5.00
" " " No. 5..... " 12.00

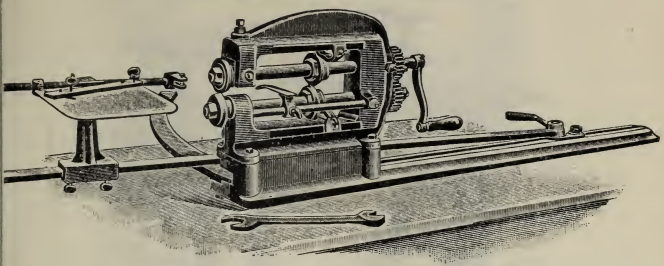
NIAGARA ROTARY SLITTING SHEARS.

The Cutting Head of the Niagara Waugh's Shears can be used as a slitting shear for light material. An iron table with gauge is provided instead of the sliding gauge.

Unless otherwise ordered, the Slitting Heads are furnished to screw to bench, with lugs shown in above cut. We can provide a stem to fit the socket of our Bench or Floor Standards, page 21, at extra cost.

	Code Word.	
No. 1 Niagara Rotary Slitting Shear, 9-inch throat.....	Reitvogt	$24.00
No. 5 " " " " 12 " "	Reixelo	45.00

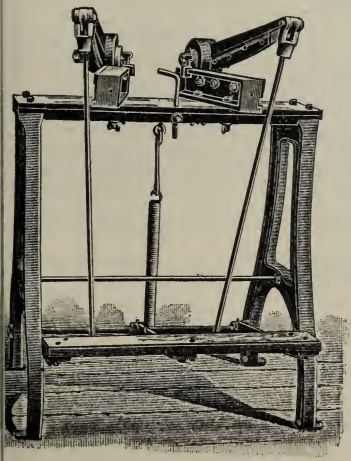
PARALLEL CURVE SHEARS.



These Shears are intended for cutting body blanks for flaring tinware and similar work. The two pairs of rotary knives cut simultaneously. One pair is fastened to the shafts, the other pair is adjustable within the limits given. The material is clamped and gauged on the swinging table.

No. 1 will cut segments of circles from 9 inches to 6 feet diam., and 3¾ to 12 inches wide.
No. 2 " " " " " 9 " " 12 " " " 3¾ " 12 " "

	Shipping Weight.	Code Word.	For Hand.	Code Word.	For Power.
No. 1 Parallel Curve Shear.....	350 lbs.	Reizend	$70.00	Rejaser	$80.00
No. 2 " " "	400 "	Reizung	80.00	Reject	90.00



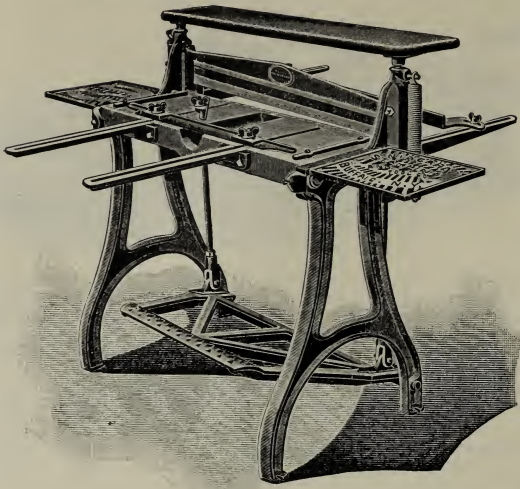
NIAGARA BEVELING SHEARS.

These Shears serve to cut the sides of flaring body blanks, at any desired angle, after the curves are cut by means of the Parallel Curve Shears, and for similar work. Both sides are cut at one operation. Adjustable gauges are provided. The adjustment to various angles can be quickly accomplished.

	No. 2.
Length of Knives.....	12-inch.
" largest blank.....	24 "
" smallest "	5 "

Price (Code Word, Rejitan)... $45.00

EXCELSIOR SQUARING SHEARS—IMPROVED.



These Shears are accurate, durable, and well adapted to all the ordinary work of tinsmiths, etc. They work easily, and no more pressure is required when the treadle is nearly down than at the beginning of the stroke.

The side legs and guides for the upper knife are cast in one piece, thus securing rigid bearings for the cutter bar. The bed is marked with a graduated scale in $\frac{1}{16}$ inches, and a wrench to take out and replace the knives is sent with each machine.

Adjustment is provided for wear of the knives and cutter bar. Our shear knives are made of high-grade materials, carefully hardened and ground on automatic machines, which makes them absolutely true in cutting edge and seat, to assure a perfect fit without backing.

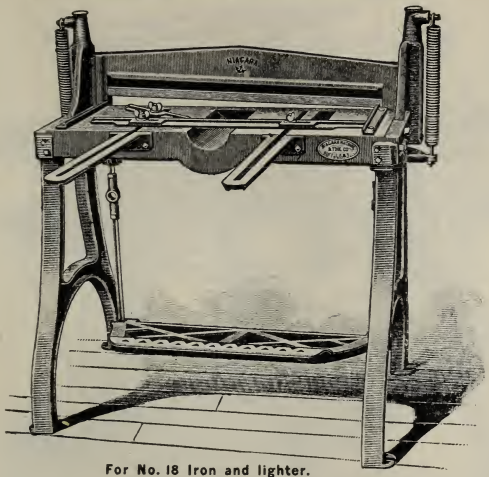
Our Squaring Shears are shipped set up, ready for use. For long distances they can be knocked down.

The price of the shears includes a full set of ordinary front, bevel and side gauges, also Micrometer Back Gauge and the top shelf.

	Code Word.	Shipping Weight.	Price.
14-inch Excelsior Squaring Shear	Rejoneo	210 lbs.	$33.00
22 " " " "	Relache	300 "	35.00
30 " " " "	Relacion	420 "	50.00
Iron Drop Tables	extra.		2.00

The accompanying cut shows the 30-inch Excelsior Shear with iron drop tables, which are very convenient.

QUEEN CITY SQUARING SHEARS.



For No. 18 Iron and lighter.

The Queen City Shears are in appearance similar to the "Excelsior," but, being heavier and stronger than these and other tinners' shears, they will cut thicker material.

Side legs and guides for cutter bar are in one piece. The cutter bar has scraped bearings.

Provision is made to compensate for the wear of the knives.

The knives are made of best materials and ground perfectly true.

Graduated scale is marked on bed.

On Shears 36 inches and longer it is advisable to use a hold-down attachment in front of the cutter bar to insure a straight cut.

The price includes a set of front, back, bevel and side gauges. The Micrometer Back Gauge is furnished with Queen City Shears up to 36 inches long unless otherwise ordered.

	Code Word.	Shipping Weight.	Price.
22-inch Queen City Squaring Shears.....	Relais	370 lbs.	$ 40.00
25 " " " " "	Relajar	400 "	45.00
30 " " " " "	Relampo	475 "	55.00
36 " " " " "	Relance	570 "	80.00
42 " " " " "	Reland	750 "	115.00
52 " " " " "	Relanzo	850 "	170.00
60 " " " " "	Relate	1000 "	210.00
Additional for hold-down on 30-in. and smaller shears.....	.....	.....	5.00

The above prices include a top shelf for 22, 25 and 30-inch shears. Prices of 36-inch and larger shears include a hold-down attachment.

NIAGARA WEIGHT SQUARING SHEARS.

For No. 18 Iron and lighter.

The main feature of these Shears is the weight device for balancing the cutter bar and treadle and lifting the top knife. This device takes the place of the springs which are used on all other foot shears. Springs will wear out, while there is no wear to the weight device. This Shear possesses all the other advantages of our Queen City Shears described on page 79 The hold-down attachment is included in the price of shears 36 inches and longer, but is charged for extra on shorter shears, if ordered.

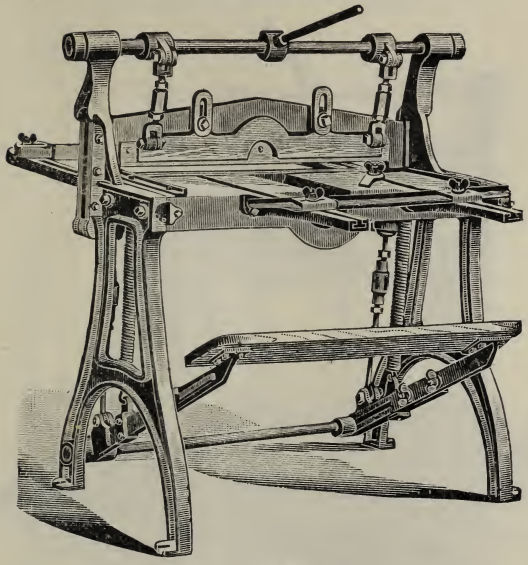
The iron pan to receive the cut pieces is sent along only if specially called for, and charged for extra at the prices mentioned below.

The prices include a top shelf and a set of front, back, bevel and side gauges. The Micrometer Back Gauge is furnished with Niagara Weight Shears up to 36 inches long. The cut shows special front and back gauges which are not included.

	Code Word.	Shipping Weight.	Price.
22-inch Niagara Weight Shears.....	Relax	500 lbs.	$ 50.00
25 " " " "	Release	525 "	55.00
30 " " " "	Relego	630 "	65.00
36 " " " " with hold-down.....	Reliant	675 "	95.00
42 " " " " " "	Relied	850 "	130.00
Hold-down to 22, 25 and 30 inch Shears.....extra,	.....	.....	5.00

	22	25	30	36	42-inch.
Pan.....extra,	$4.00	$4.50	$5.00	$7.00	$8.00

HERCULES SQUARING SHEARS.



For No. 15 Iron and lighter

The Hercules Squaring Shears are substantial and powerful machines. The bed is extra strong, and the treadle is made extensible, so that the leverage can be adjusted according to the power required. An independent hold-down, operated by hand lever, as shown in cut, is provided. The price includes a set of gauges, including the Micrometer Back Gauge, on Shears up to 36 inches long.

	Code Word.	Shipping Weight.	Price.
20-inch Hercules Squaring Shears, with hold-down.....	Religar	500 lbs.	$60.00
25 " " " " " "	Relimer	550 "	65.00
30 " " " " " "	Relist	650 "	75.00
36 " " " " " "	Relodge	700 "	100.00
42 " " " " " "	Relutto	900 "	140.00
52 " " " " " "	Remada	1100 "	200.00

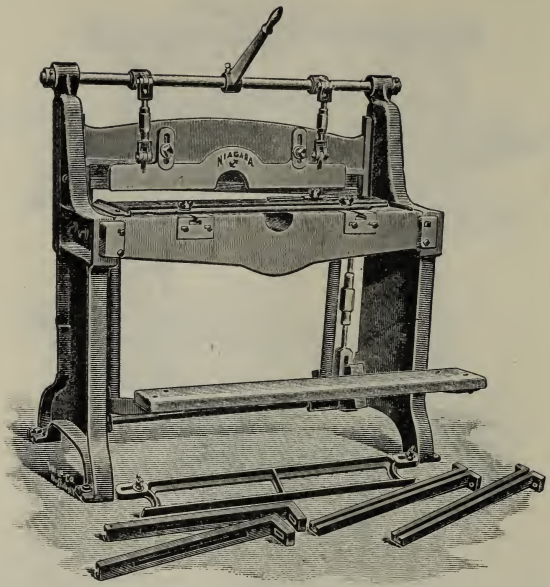
This Shear will not be supplied without hold-down.

SHEARS FOR CORRUGATED METAL.

The Hercules Shears can be furnished with knives for cutting corrugated sheets. When so arranged they will not cut as heavy stock as with straight knives. The knives are made to fit the corrugations. A hold-down is not furnished with Corrugated Shears.

30-inch Hercules Shear, with corrugated blades.....	$120.00
36 " " " " " "	160.00
42 " " " " " "	210.00

HEAVY FOOT SQUARING SHEARS.



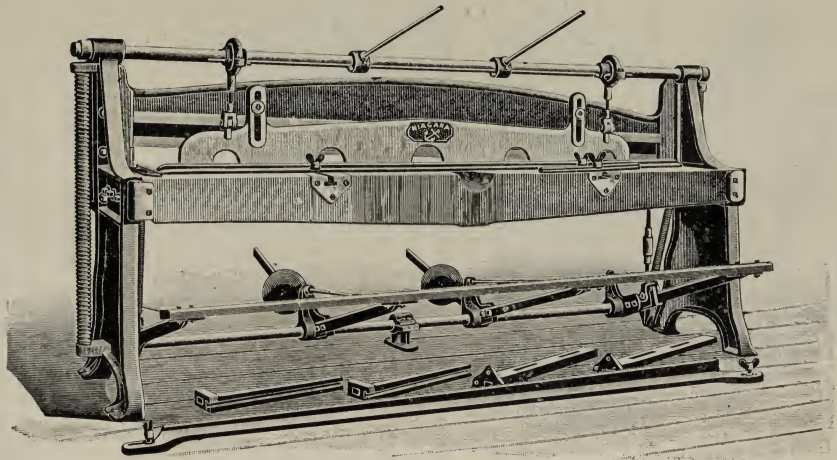
For No. 14 Soft Sheet Steel or Iron and lighter.

These Shears take care of the heaviest work for which it is practicable to use Foot Shears. All parts are extra heavy, the wearing surfaces large, and means are provided to take up wear. The treadle is forged of steel and made extensible to permit of adjusting the leverage according to the thickness of the material to be cut. The lever hold-down gives a firm grip upon the material and insures a straight cut.

	Code Word.	Shipping Weight.	Price.
36-inch Heavy Foot Squaring Shear.....	Remanso	1150 lbs.	$140.00
42 " " " " "	Remedy	1300 "	180.00
52 " " " " "	Remiges	1625 "	240.00

The prices include hold-down and a set of gauges.

NIAGARA CORNICE MAKERS' SQUARING SHEARS.



8-foot Shear for Foot Power.

NIAGARA CORNICE MAKERS' SQUARING SHEARS.

FOOT POWER.

Capacity No. 18 Iron and lighter.

In workmanship, strength and durability these are the most perfect machines of the kind. The legs and side guides for cross-head are cast in one piece, which insures rigidness. The cross-head carrying the upper knife is exceptionally strong, and has long and wide bearings, scraped to a proper fit. There are gibs in the guides to compensate for wear.

By means of a hold-down, operated either by an adjustable hand lever (as per cut) or by springs, the sheet is held firmly upon the table, so that a perfectly straight cut is obtained. The hold-down does not extend all the way across the upper blade but stops short about one foot from each side and there are several half-round openings on its lower surface, so that marks on the sheet can be seen

The machine has a full set of front, back, bevel and side gauges. The table is marked with a graduated scale, divided in $\frac{1}{16}$ inches. The knives are machine-ground, true and fit without lining.

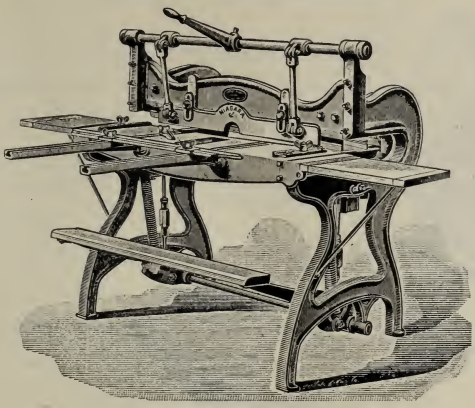
At extra cost we furnish our **IMPROVED AUTOMATIC BACK GAUGE.** This gauge moves on screws always parallel with the knives, and it can be set by the operator from either end of the machine.

	CODE WORD.	SHIPPING WEIGHT.	PRICE.
6-foot Cornice Makers' Foot Shears.....	Remind	1900 lbs.	$205.00
7 " " " " "	Remisso	2200 "	235.00
8 " " " " "	Obgero	2950 "	280.00
10 " " " " " with center leg...	Obilla	3800 "	375 00
11 " " " " " " " " "...	Obispar	4000 "	400.00
Improved Automatic Back Gauge.....extra,	Oblidas		35.00

POWER SQUARING SHEARS.

We make a large variety of Power Shears, with gap or solid housings, from 2 to 11 feet long, and of various capacities up to ¼-inch stock.

NIAGARA FOOT GAP SHEARS.



For No. 16 Iron and lighter.

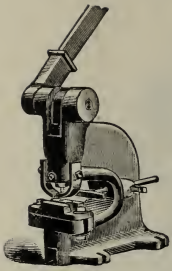
These Shears have a 15-inch gap which permits of cutting sheets of unlimited length up to 15 inches from the edge. The actual cutting length is about one inch more than the nominal size, and the housings are far enough apart that sheets of the widths mentioned below can be passed through from front to back.

The extensible treadle is made of steel. The leverage can be regulated according to the thicknes of the material by adjusting the length of the treadle, and when the treadle is at full length, No. 16 iron can be cut nicely. Drop-leaf tables are furnished on each end of the bed, for supporting long sheets. The hold-down is operated by hand lever. The knives are of the best quality of steel, ground true to fit without lining.

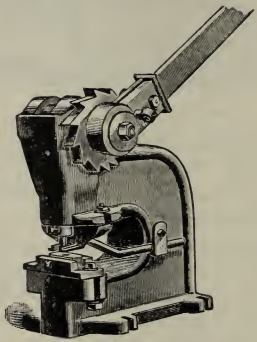
Complete with full set of back, front, bevel and side gauges, and wrench for removing the knives.

	Code Word	Shipping Weight.	Price.
30-inch Foot Gap Shear, 15-inch throat, with gauges	Remodel	1000 lbs.	$ 95.00
36 " " " " " " " "	Remojos	1150 "	110.00
42 " " " " " " " "	Remorse	1300 "	140.00
52 " " " " " " " "	Remus	1500 "	175.00
Extra for 18-inch throat.....	Renard	.....	10.00
" Hold-down	Rende	.....	5.00
" Drop-leaf Tables.....	Renebo	.....	3.00

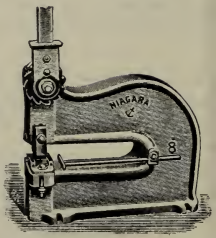
NIAGARA LEVER PUNCHES.



No. 12.



No. 22, with Ratchet.



No. 24, with Ratchet.

NIAGARA LEVER PUNCHES.

Nos. 11 to 14.—The lever is short and works both ways The machine has sufficient strength to punch a hole ¼ inch diameter through iron ¼ inch thick, without exertion on the part of the operator. An adjustable gauge is applied to regulate the distance of the holes from the edge of the sheet, also a stripping attachment.

Three punches—⅛, $\frac{3}{16}$ and ¼ inch diameter—and one die to match are included in the price.

	Throat.	Code Word.	Weight	Price.
No. 11 Niagara Lever Punch.....	4 inches.	Orava	105 lbs.	$12.50
No. 12 " " "	6 "	Orbavit	115 "	15.00
No. 13 " " "	10 "	Orbical	150 "	20.00
No. 14 " " "	15 "	Orbing	240 "	25.00

Nos. 21 to 24.—These machines are intended for heavy work. They can be operated with or without ratchet, and the change is made quickly and easily.

Without the ratchet the lever works towards the front; with the ratchet it works towards the back of the machine.

Stripping attachment and back gauge are provided.

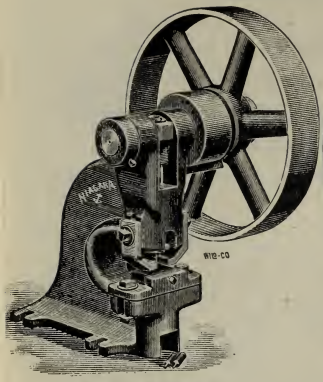
Will punch, without ratchet, ½ inch hole through ¼ inch iron, or equivalent.

" with " ½ " " " ⅜ " " " "

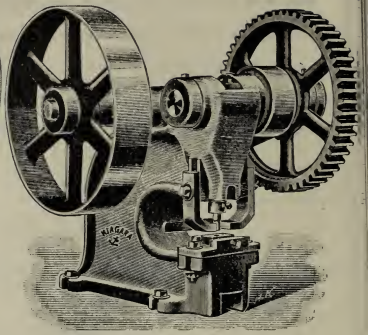
Three punches—¼, ⅜ and ½ inch diameter—and one die to match are included in the price.

	Throat.	Code Word.	Weight.	Price.
No. 21 Niagara Lever Punch.....	4 inches.	Orcales	150 lbs.	$20.00
No. 22 " " "	6 "	Orchata	210 "	24.00
No. 23 " " "	10 "	Ordeloos	375 "	32.00
No. 24 " " "	15 "	Ordimur	550 "	40.00

NIAGARA POWER PUNCHES.



No. 112—Not Geared.



No. 122—Geared.

NOT GEARED.—These machines will punch holes ¼ inch diameter through iron or soft sheet steel ⅛ inch thick, or equivalent. The motion is controlled by an automatic clutch, controlled by foot treadle, which stops positively at the highest point after every stroke, unless the treadle is kept depressed. Stripping attachment is provided, also an adjustable gauge for the distance of the holes from the edge of the sheet.

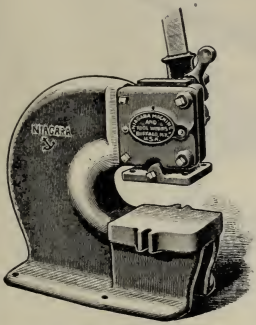
Three punches—⅛, $\frac{3}{16}$ and ¼ inch diameter—and one die to match are included in the price.

	Throat.	Code Word.	Weight.	Price.
No. 111 Niagara Power Punch.....	4 inches.	Orfico	175 lbs.	$47.50
No. 112 " " "	6 "	Origem	185 "	50.00
No. 113 " " "	10 "	Orkan	220 "	55.00
No. 114 " " "	15 "	Orlando	310 "	60.00

GEARED.—They are made similar to the plain machine, but with heavier frame and geared. Capacity, ¼ inch holes through ¼ inch iron, or equivalent. With three punches—⅛, $\frac{3}{16}$ and ¼ inch diameter—and one die to match.

	Throat.	Code Word.	Weight.	Price.
No. 121 Geared Power Punch	4 inches.	Ormino	250 lbs.	$65.00
No. 122 " " "	6 "	Orobus	310 "	70.00
No. 123 " " "	10 "	Oronte	475 "	78.00
No. 124 " " "	15 "	Orpheus	650 "	85.00

No. 32 NIAGARA LEVER PUNCH.



The slide runs in rectangular guides to insure true motion up and down and to make the machine suitable for punching square and irregular shaped holes. For light work the machine is operated direct; for heavy stock the ratchet is used.

Without ratchet will punch ½-inch hole through ¼-inch iron or equivalent.

With ratchet will punch ½-inch hole through ⅜-inch iron or equivalent.

Size of face opening in bed, square	5 x 5 inches
" opening in slide for punch shank, round	1 "
Distance from bed to slide when up	4¼ "
" " " " " down	3⅞ "
Weight	350 lbs.
No. 32 Niagara Lever Punch (Code Word, Renfort)	$38.00

The price does not include punches, dies and stripper, which are charged for extra, according to sizes and shapes.

No. 44 NIAGARA LEVER PUNCH.

The round end of the base, in which the die is inserted, permits of punching holes in pipe 4¼ inches diameter and larger, up to 7 inches from the end. A stay bolt is used to increase the capacity by stiffening the frame.

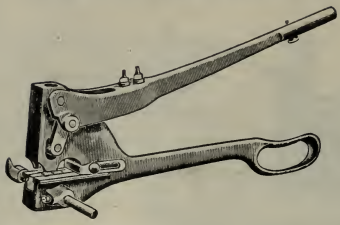
Without stay bolt will punch up to 15 inches from the edge of sheets No. 12 gauge and lighter.

With stay bolt will punch up to 7 inches from the edge of sheets No. 9 gauge and lighter.

Punches and dies for holes ⅛, $\frac{3}{16}$ and ¼-inch diameter are sent along.

No. 44 Niagara Lever Punch, weight 125 lbs. (Code Word, Rengos)..... $18.00

PORTABLE LEVER PUNCH.



The plunger of this handy machine is operated by a powerful toggle movement. All parts are made of malleable iron and steel, in order to combine strength with the least possible weight. Back and side gauges are provided.

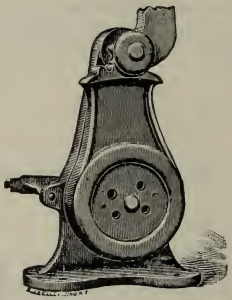
Depth of throat, 1⅜ inches.

Will punch ¼-inch hole through No. 18 iron.

Three punches and one die for holes ⅛, $\frac{3}{16}$ and ¼-inch diameter are sent along.

Portable Lever Punch, weight 6 lbs. (Code Word, Renilla) $6.00

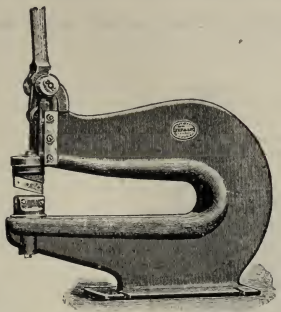
WIRE AND ROD CUTTER.



These are very handy tools for cutting round wire and bars. There is an adjustable gauge so that any number of shorter pieces can be cut the same length without having to measure each piece.

	Code Word.	Net Weight.	Price.
No. 0 Wire and Rod Cutter, holes in die ⅛, $\frac{3}{16}$, ¼-inch diam...	Renntag	5 lbs.	$ 4.00
No. 3 " " " " " $\frac{3}{32}$, $\frac{5}{32}$, $\frac{1}{8}$ " " ...	Rennziel	56 "	12.50
No. 5 " " " " " $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ " " ...	Renome	108 "	25.00

NIAGARA DEEP THROAT LEVER SHEARS AND PUNCHES.



Will Cut Iron or Soft Steel up to 1-8 inch thick.

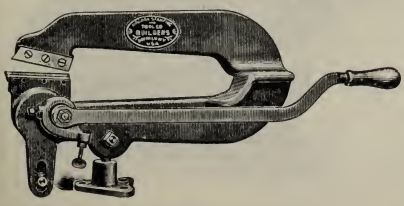
The Shears are particularly adapted to range work. On account of the deep throat they can be used for cutting holes in large sheets. The knives are arranged to swivel, which permits of cutting from front to back, right to left, or at any desired angle, according to the nature of the work. The position of the knives can be changed quickly. The V-shaped slide is well fitted, and provided with adjustable gib to compensate for wear. The knives are 4 inches long, and each of them has two cutting edges which can be used alternately.

These machines can be arranged for punching small holes, the capacity being ¼-inch hole through No. 14 iron, or equivalent.

	Code Word.	Shipping Weight.	Price.
Niagara Deep Throat Shears, 18-inch throat	Oruga	300 lbs.	$40.00
" " " " 24 " "	Osage	450 "	50.00
" " " Punch, 18 " " for ¼-inch hole,	Orzella	300 "	40.00
" " " " 24 " " " " "	Osannier	450 "	50.00
Iron Table and Legs	Oscan	100 "	5.00
Price of Holders, Punch, Die and Stripper (¼-inch hole) for use on Deep Throat Shears in place of the Knives	Osburga	.....	10.00

SCROLL SHEARS.

For No. 20 Iron.

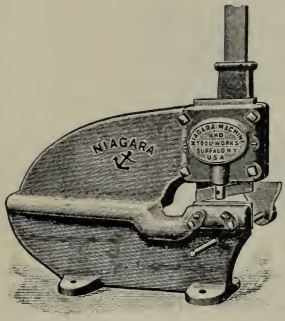


Will cut ovals, ogees, irregular shapes and patterns of all kinds, with ease. Distance from knives to frame, 11½ inches. Knives 4 inches long.

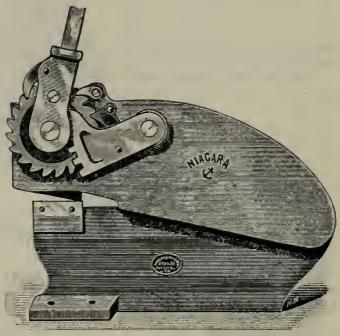
	Code Word.	Shipping Weight.	
Scroll Shears	Renonce.	85 lbs.	$20.00

NIAGARA LEVER SHEARS.

FOR CUTTING PLATE IRON OF ANY WIDTH AND LENGTH.



No. 13.



No. 15.

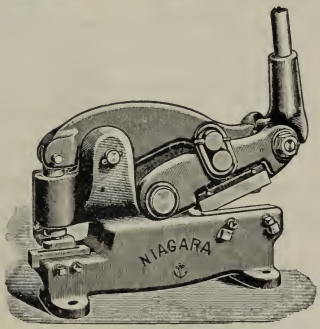
NIAGARA LEVER SHEARS.

These Lever Shears are excellent machines for cutting sheet iron in places where a Power Squaring Shear would be too high in price. The lever works to the front, so that one operator can use the machine. All the parts are well fitted. The knives are readily removed and ground. The frame is cut back to allow the sheet to pass freely.

No. 15 can be operated at three different speeds, viz.: With the lever acting direct on the slide for light work; or with the ratchet and pawl for plates of medium thickness; or with compound lever for heavy work. One man can operate the machine when using it to its utmost capacity. The frame carries a device, working on springs, that crowds between the two parts of the sheet. At the upstroke of the knives it holds them apart and gives the operator a chance to move the sheet forward without difficulty for the next cut. The knives are adjustable for wear, and an adjustable guage is provided, besides the hold-down that prevents the material from rising while being cut.

	Code Word.	Length of Knives	Weight.	Price.
No. 13 Niagara Lever Shear will cut ¼ plate iron..	Osorem	4½ ins.	200 lbs.	$25.00
No. 14 " " " " ⅜ " "	Osteal	5 "	400 "	40.00
No. 15 " " " " ½ " "	Ostiak	6 "	800 "	90.00
Iron Legs for Nos. 13 and 14.....extra,	.....	.....	.....	5.00
" " " No. 15..... ..... "	.....	.....	.....	10.00

COMBINED SHEARS AND PUNCHES.

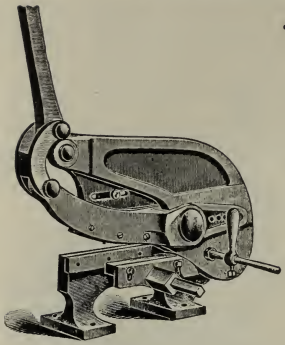


These machines are suitable for cutting and punching metal. Sheets of any length and width can be cut apart. In shearing, as well as punching, the lever works towards the operator.

No. 1 will cut ⅛-inch iron; will punch ¼-inch hole through ⅛-inch iron.
No. 2 " ⅛ " " " ¼ " " " 5/16 " "
No. 3 " ⅛ " " " ¼ " " " ¼ " "
Cutting length of No. 1, 4 inches; No. 2, 5 inches; No. 3, 8½ inches.
Throat of punch— " 2¾ " " 3½ " " 5 "

	Code Word.	Weight.	Price.
No. 1 Comb. Shear and Punch, with ⅛, 3/16, ¼, 5/16 punches,	Orteil	100 lbs.	$16 00
No. 2 " " " " ⅛, 3/16, ¼, 5/16, ⅜ "	Ortica	115 "	20.00
No. 3 " " " " ⅛, 3/16, ¼, ⅜ "	Ortoso	235 "	35.00

NIAGARA PLATE AND ROD SHEARS.



These machines have a powerful toggle mechanism. They are durable, and especially adapted to cutting sheets of any length and width, as well as bars. Each machine is fitted with adjustable gauges for sheet and rod cutting, and a vertical hold-down to prevent the sheet from rising while being cut.

NUMBER.	1	2	3
Length of knives.....inches,	10	10	10
Will cut plate iron up to..... "	⅛	⅜	¼
" " flat " " ..... "	¼ x 3	⅜ x 3	⅜ x 3
" " round " ..... "	½	¾	⅞
Weight.....lbs.	160	210	315
Code Word.....	Osdara	Osiride	Osfalgia
Price	$32.00	$38.00	$45.00
Iron Legs ..... extra,	5.00	5.00	5.00

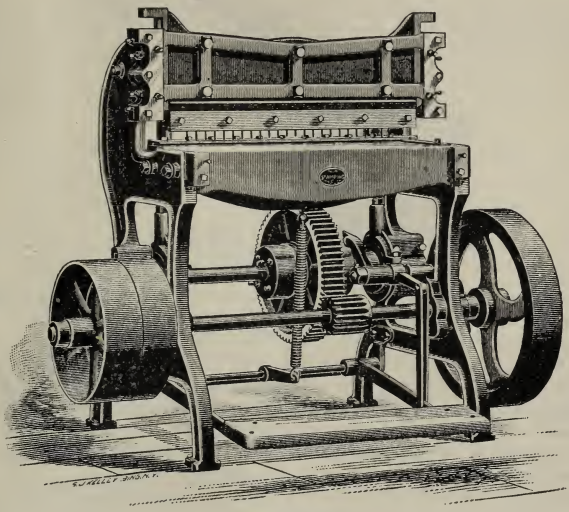
EXTRAS FOR LEVER PUNCHES AND SHEARS.

The following prices apply to standard sizes only. Special sizes are charged for at special prices.

EXTRA PUNCHES, ⅜-inch and smaller, to be inserted in Punch Holder :	
For Lever Punches Nos. 11 to 14, 21 to 24 and 44.....	$0.30
" Power Punches Nos. 111 to 114 and 121 to 124.....	
" Combined Punches and Shears Nos. 1, 2 and 3	
EXTRA PUNCH HOLDERS for the above Punches	.50
EXTRA PUNCHES, ½-inch for No. 21 to 24 and 121 to 124, Portable Lever Punch and Deep Throat Punches.....	.75
EXTRA DIES with regular holes .	
For Lever Punches Nos. 11 to 14, 21 to 24 and Portable Lever Punch..	1.25
" Power Punches No. 111 to 114 and 121 to 124.....	
" Combined Punches and Shears Nos. 1, 2 and 3.....	
" Lever Punches No. 44 and Deep Throat Punches.....	.75
EXTRA KNIVES:	
For Lever Shears Nos. 13 and 14.....per pair,	3.50
" Plate and Rod Shears Nos. 1, 2 and 3.....upper,	3.00
" " " " " " " " .....lower,	2.25
" Combined Punches and Shears Nos. 1 and 2.....per pair,	4.00
" " " " No. 3..... "	4.50
" Deep Throat Lever Shears..... "	4.00
Scroll Shears..... "	4.00

GANG PUNCHING MACHINES.

For Hand, Foot or Power.



For Power.

We make a specialty of these machines, and have the experience necessary for satisfactory results. They are found labor-saving for many purposes. Special attention is given to the rigidity of the machines, combined with simplicity of construction.

For light work the machine can be made either with foot treadle or with hand lever; for heavier work belt power is necessary

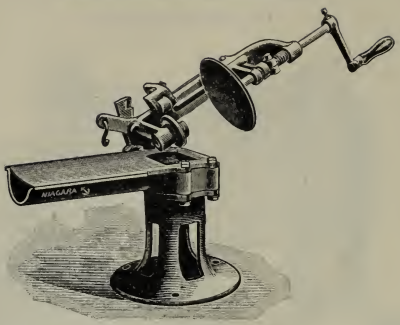
Our standard size is for work 34 inches between extreme punches. There is usually a gap in the housings, which permits of punching sheets of unlimited lengths all along the edge.

The back gauge is adjustable, and a gauge gives the exact distance from last hole punched to the first hole in the following operation.

When writing for price, please state. Size of holes, number of holes, distance of holes from center to center and from edge of sheet, thickness and kind of heaviest metal to be punched.

We have numerous patterns of Gang Punches which are used as best adapted to the work. Inquiries should give the particulars stated on opposite page.

NIAGARA CAN FLOATER.



This device is intended for soldering the bottoms and tops of fruit and other round cans on the outside in a solder bath. By this method the work is done more rapidly and uniformly than in the old way.

The can is clamped between 2 disks which permit of revolving it true and freely by turning the crank. To facilitate putting the can in position, the head that carries the clamping disks can be swung in vertical position by depressing the foot treadle. When the operator returns the head to the inclined position, the can is clamped automatically.

The gases from the burner escape through the flue at the left hand side and the heat created thereby is utilized to warm the cans prior to floating them.

This Floater can be quickly adjusted from 2 inches to 7 inches diameter, and from 2 inches to 7 inches long. No extra attachments are needed for the various sizes.

	Code Word.	Shipping Weight.	Price.
Niagara Can Floater without burner.....	Renovar	85 lbs.	$18.00
" " " with gasoline burner.....	Renown	.....	22.50
" " " " gas burner.....	Rentabel	.....	21.00

DIES.

We have excellent facilities for making Dies, and it will be to the interest of intending buyers to communicate with us. The manufacturers of Dies can give closest quotation when fully informed in regard to the requirements of each special case. Inquiries should give full information as to the character and size of the work to be done; also as to the desired daily output; whether the use of belt power is contemplated, etc. Samples or accurate drawings showing dimensions, shapes and joints of the articles to be produced will greatly facilitate mutual understanding, and they should accompany inquiries.

Our Dies are constructed on the most improved principles and of the very best material—we use highest grade cast steel—with a view to giving lasting satisfaction.

NIAGARA POWER SQUARING SHEARS.

GENERAL DESCRIPTION.

THE Niagara Power Shears embody all improvements that have been found of real value in machines of this nature. Only the best of materials are used and properly distributed. The wearing surfaces are large, and adjustments are provided to take up wear. Bed and Crosshead are heavily ribbed, so that the machine can do its work without undue strain.

Length of Cut.—Our Shears cut fully the lengths given, and usually overrun about one inch.

Hold-down.—There is an automatic-working Hold-down in front of the Crosshead, which holds the sheet firmly while being cut, thereby preventing the drawing of the material. This Hold-down will raise quickly when the cut is made. There are one or more openings in the Hold-down to enable the operator to see the cutting line.

Gauges.—The Shears are furnished with a set of front, back, bevel and side Gauges. The Back Brackets and Gauge rise and fall with the Crosshead carrying the upper knife, and narrow strips can be cut the full length of the blades. The table and gauge arms have T slots.

In place of the ordinary Back Gauge we can furnish, at an extra cost, our IMPROVED AUTOMATIC BACK GAUGE, which is convenient on long Shears. It moves parallel to the knives, and can be set by the operator accurately from either end of the Shear.

Knives are made of high grade steel welded to iron, carefully tempered and ground perfectly true by means of a grinding machine especially constructed for the purpose. They fit without lining. The knives can be easily removed for grinding.

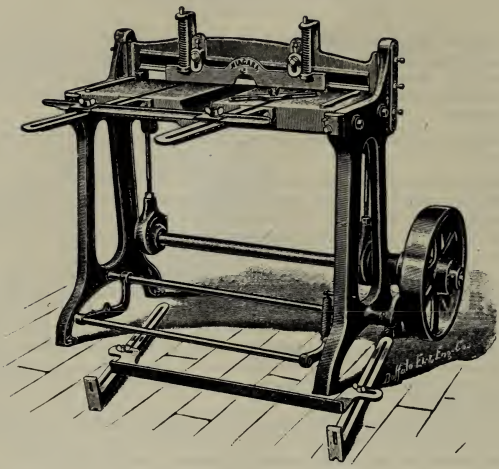
Graduated Scale.—The Bed is marked with a graduated scale, divided in $\frac{1}{16}$ inches.

Eccentrics and Connections are so constructed as to be readily adjusted to compensate for the wear of the blades.

Clutch.—The motion of the Crosshead or Cutter Bar of our Power Shears is controlled by the improved Niagara Shear Clutch. It is positive and of simple construction. The working parts are made of tool steel and hardened, and the wearing and pressure surfaces are larger than on any other Clutch, thereby insuring durability and least possible likelihood of getting out of order. In place of the ordinary clutch pin, a latch of segment shape, with very large striking surface is used. The Clutch can be taken apart and examined by simply sliding the wheel towards the end of the shaft. Provision is made to prevent particles of dust, dirt, etc., from getting between the wearing surfaces. A slight depression of the foot treadle is sufficient to trip the Clutch, and the motion will stop automatically when the Crosshead is again at the highest point, while the fly-wheel keeps on revolving. By keeping the treadle depressed the motion will be continuous. There are two or more steel-lined engaging grooves in the hub of the wheel, so that not more than one-half of a revolution can be lost in starting after the treadle is depressed. The parts of most other Clutches are held together by means of nuts and screws, and these will work loose through the constant jar resulting from the action of the machine, thereby causing trouble. No screws or nuts whatever are used in the construction of the Niagara Clutch, and the advantage thereof is obvious.

Friction Device is used in connection with the driving mechanism to insure stoppage at the highest point and to prevent back lash of the Crosshead.

NIAGARA POWER SQUARING SHEARS, No. 30.



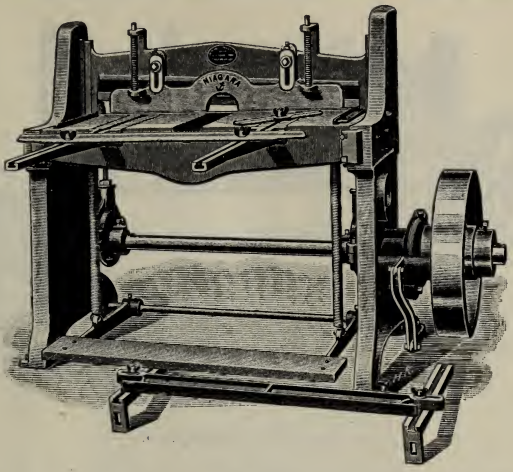
For No. 22 Iron and lighter.

These Shears are intended for the same class of work as Tinners' Foot Shears, and for work within the range mentioned they will answer as well as more expensive machines. A clutch causes the crosshead with upper knife to stop positively at the highest point after every stroke, unless the treadle is kept depressed. A set of gauges is provided, and the hold-down shown in the illustration can be attached, if desired, to prevent draw-cuts.

No.	Will Cut and Square.	Fly-Wheel.			Weight.	Price.	Code Word.
		Diam.	Face.	Revol.			
	Inches.	Inches.	Inches.	Per Min.	Lbs.		
30	30	18	2½	75	500	$	Obacht.

Automatic Spring Hold-down (Code Word, Obadja), extra, $

NIAGARA POWER SQUARING SHEARS, No. 100 Series.



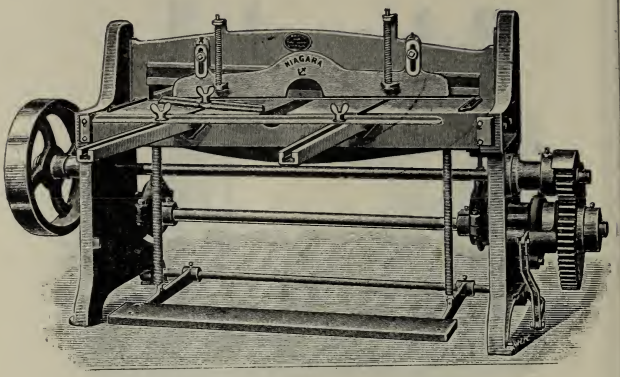
No. 152.
For No. 18 Iron and lighter.

These Shears are suitable for cutting and squaring tinplate, copper, brass and other sheet metals. They are well proportioned and all parts carefully fitted. The knives are made of high grade materials, properly tempered and ground true. Adjustment is provided to take up wear. The automatic hold-down descends ahead of the crosshead to clamp the sheet firmly while being cut, to prevent draw-cuts. It releases quickly when the cut is made. A positive clutch allows but one stroke at each depression of the foot treadle and causes the crosshead with upper knife to stop at the highest point, unless the treadle is kept depressed. The price includes a set of front, back, bevel and side gauges to facilitate cutting to size without marking the sheets.

SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square	FLY-WHEEL.			Weight.	Price.	Code Word.
		Diam.	Face.	Speed.			
	Inches.	Inches	Inches.	Revol	Lbs.		
130	30	20	3	75	550	$	Obagitet.
136	36	22	4	75	600	$	Obarni.
152	52	25	4	75	900	$	Obarsit.
162	62	25	4	75	1,200	$	Obbis.
172	72	25	4	75	1,500	$	Obclave.

NIAGARA POWER SQUARING SHEARS, No. 200 Series.



No. 252.

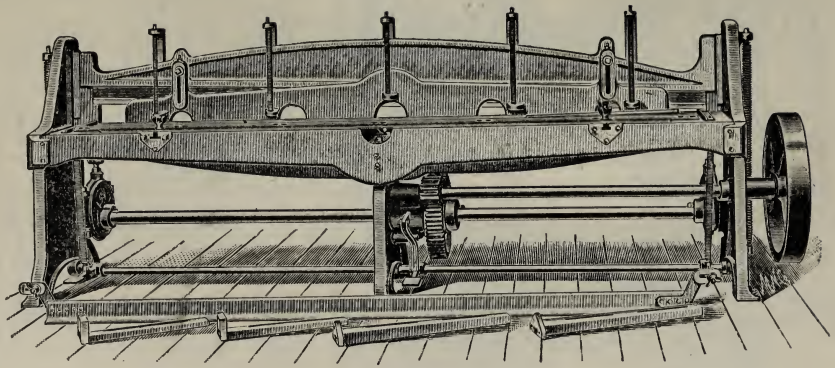
For No. 14 Iron and lighter.

These Shears are in construction similar to those of the No. 100 Series, but made off heavier patterns and back geared. They can be highly recommended for work within the range mentioned. They are provided with an automatic spring hold-down, automatic clutch of simple construction and great durability, also a set of front, back, bevel and side gauges. The gears are machine-cut.

SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square.	FLY-WHEEL.			Weight.	Price.	Code Word.
		Diam.	Face.	Speed.			
	Inches.	Inches.	Inches.	Revol.	Lbs.		
225	25	20	3	150	1,000	$	Obcorde.
230	30	20	3	150	1,200	$	Obdach.
236	36	22	4	150	1,490	$	Obdarem
242	42	22	4	150	1,800	$	Obdet.
252	52	25	4	150	2,000	$	Obducto.
262	62	28	4	150	2,100	$	Obelize
272	72	28	4	150	2,500	$	Obenan.

NIAGARA POWER SQUARING SHEARS No. 196, &c.



Cut shows No. 1120 for Power.

For No. 18 Iron and lighter.

NIAGARA SQUARING SHEARS, No. 196, &c.

Capacity, No. 18 Iron and lighter.

These Shears were originally designed for cornice work, but they are equally valuable for other branches of manufacture where sheet metal is cut up in large quantities. They are made for either foot or belt power, or so that both can be used alternately. In some cases, where the supply of belt power cannot be relied upon, it is well to have shears that can be operated either by foot or by belt power.

These Shears are of substantial construction, with the material properly distributed and all parts are well fitted. The wearing surfaces are large and means are provided to take up wear. The crosshead is counter-balanced. The knives are made of best materials, carefully hardened and ground perfectly true. A graduated scale is marked on the table.

The hold-down attachment, operated automatically by springs, holds the sheet firmly upon the bed while being cut, so that a perfectly straight cut is obtained. The 8-ft. Shear for foot has a lever hold-down.

The Shears driven by belt power are back geared, thereby insuring smooth and easy action. The gears are machine-cut and protected. The fly-wheel is 28-inch diameter, 4½-inch face, and it should run at a speed of 125 revolutions per minute. If run continuously, the machine will make 40 cuts a minute. The motion is controlled by the Niagara Clutch, and it may be started from any one of the three foot treadles.

The actual cutting length is about one inch more than the nominal sizes: No. 196, 8 feet; No. 1120, 10 feet; No. 1132, 11 feet.

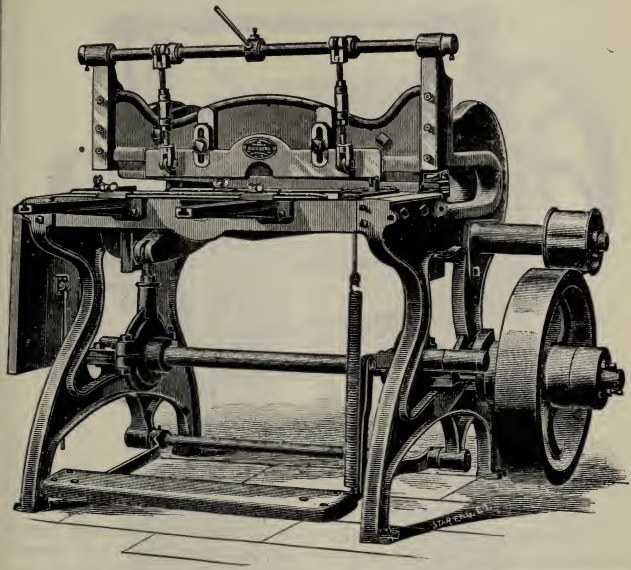
SEE GENERAL DESCRIPTION, PAGE 97.

FOR FOOT.				FOR POWER.			COMBINED		
No.	Weight	Price	Code Word	Weight	Price.	Code Word	Weight	Price.	Code Word
	Lbs.			Lbs.			Lbs.		
196	2800	$	Obgero.	3200	$	Obitual.	3600	$	Oblato.
1120	3800	$	Obilla.	4300	$	Obivit.	4800	$	Oblenies.
1132	4000	$	Obispar.	4500	$	Objector.	5100	$	Obliando.

Improved Automatic Back Gauge (Code Word, Cblidas), extra, $

A set of front, back, bevel and side gauges is included in the price

NIAGARA POWER GAP SHEARS, No. 400 Series.



Not Geared, for No. 18 Iron and lighter; Geared, for No. 16 and lighter Iron.

The housings of these Shears have a gap or open throat 15 inches deep. In addition to cutting and squaring sheets of sizes given below, sheets of unlimited lengths can be trimmed and cut apart up to 15 inches from the edge.

These Shears are furnished with an automatic-working spring hold-down in place of the lever hold-down shown in cut. (On Power Shears that are intended for light iron, say up to No. 16, the spring hold-down is preferable.) We provide drop-leaf tables at both ends, which are found convenient in cutting long sheets.

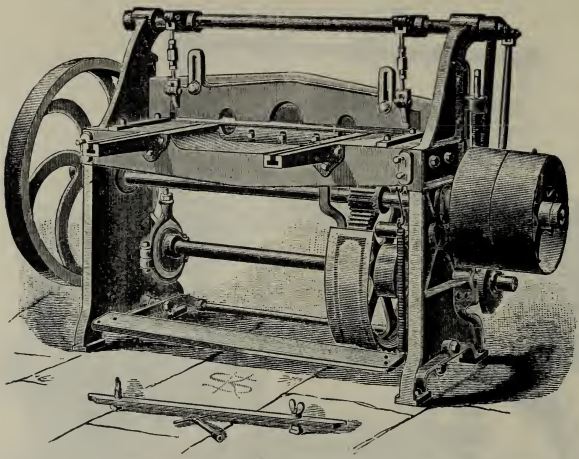
Our Gap Shears have long and wide wearing surfaces, and adjustment is provided to take up wear. The motion is controlled by a positive clutch. The Geared Shears have T and L pulleys, besides the fly-wheel, and machine-cut gears.

SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square.	NOT GEARED.			GEARED		
		Weight.	Price.	Code Word.	Weight	Price	Code Word.
	Inches.	Lbs.			Lbs.		
430	30	1,500	$	Oblinget.	1.900	$	Obmordent.
436	36	1,600	$	Obliscor.	2,000	$	Obmoti.
442	42	1,800	$	Oblito.	2,200	$	Obmoveo.
452	52	2,000	$	Obluvia.	2,400	$	Obnatis.
462	62	2,200	$	Obmann.	2,600	$	Obnexos.

The hold-down, drop-leaf tables and a set of gauges are included in the price

NIAGARA POWER SQUARING SHEARS, No. 300 Series.



For Sheet Iron and Soft Steel up to 1-8 inch thick.

These are strong, substantial and durable machines.

The automatic hold-down is adjustable for various thicknesses of material and operated by cam and lever from the main shaft. The gear wheels are machine-cut and protected. Adjustment is provided to take up wear on guides, knives and bearings.

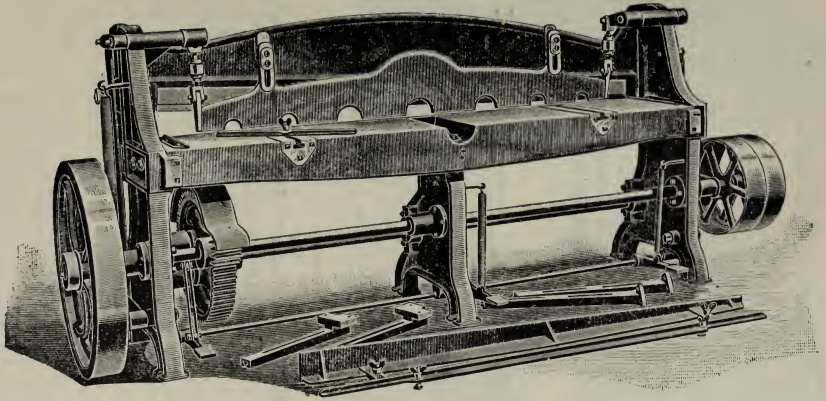
A positive clutch mechanism allows but one stroke at each depression of the foot treadle, unless the latter is kept depressed, when the motion of the crosshead with upper knife will be continuous.

SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square.	DRIVING PULLEYS.			Proportion of Gearing.	Weight	Price.	Code Word.
		Diam.	Face.	Speed.				
	Inches.	Inches.	Inches.	Revol.		Lbs.		
326	26	16	5	225	5½ : 1	1,800	$	Obnitor.
330	30	16	5	225	5½ : 1	2,200	$	Obnubo.
336	36	16	5	225	5½ : 1	2,400	$	Oboca.
342	42	16	5	225	5½ : 1	2,600	$	Obolary.
352	52	18	5	225	5½ : 1	2,800	$	Oborto.
362	62	18	5	225	6 : 1	3,000	$	Obragem.
372	72	18	6	225	6 : 1	3,800	$	Obrais.

Price includes the hold-down and a set of gauges.

NIAGARA POWER SQUARING SHEARS, No. 396, &c.



Cut Shows No. 396 Shear.

For Iron and Soft Steel up to No. 12 Gauge

NIAGARA POWER SQUARING SHEARS, No. 396, &c.

These Shears are of modern design and self-contained. The crosshead with upper knife is operated by means of crank disks. The guides for the crosshead and other wearing surfaces are large, and means are provided to take up wear The knives are made of best materials, properly hardened and ground true. The gears are machine-cut and protected, and T and L pulleys are furnished besides the fly-wheel The automatic hold-down in front of the crosshead is operated by cams and levers from the main shaft

The Niagara Clutch controls the motion, and there are three foot treadles at different points, from which the Shear can be thrown in action. The clutch is coupled to the gear wheel in a positive manner, thereby preventing the crosshead from dropping ahead of the wheel on account of its weight. This construction does away with balance weights or undue brake pressure, which are usually employed to counteract this tendency

The actual cutting length is about one inch more than the nominal size.

SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square.	DRIVING PULLEYS.			Proportion of Gearing.	Weight	Price	Code Word
		Diam.	Face.	Speed.				
	Inches.	Inches.	Inches.	Revol.		Lbs.		
396	96	20	5	200	6 : 1	5,200	$	Obraras
3120	120	20	5½	200	6 : 1	5,800	$	Obrimas.
3132	132	20	6	200	6 : 1	6,300	$	Obrok.

The price includes a set of front, back, bevel and side gauges.

NIAGARA POWER GAP SHEARS, No. 696, &c.

With 15-Inch Gap.

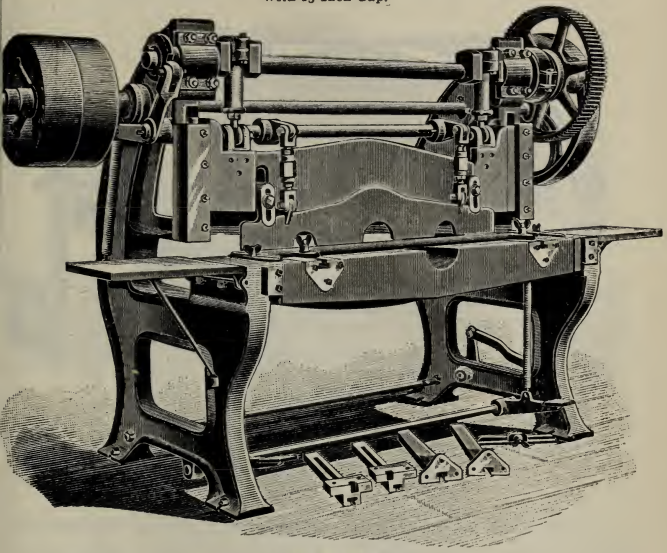
We make Shears of the same capacity as those described above (No. 12 gauge iron or soft steel and lighter) and of similar construction, but with housings having a gap or open throat 15 inches deep to permit of cutting sheets of any length. The driving mechanism of the Gap Shears is put overhead like that of our No. 652 Power Shears. (See Page 107.)

No.	Will Cut and Square	DRIVING PULLEYS.			Proportion of Gearing.	Weight.	Price.	Code Word
		Diam	Face.	Speed.				
	Inches	Inches.	Inches.	Revol.		Lbs.		
696	96	20	5	200	6 : 1	6,750	$	Obructo.
6120	120	20	5½	200	6 : 1	7,500	$	Obrute.
6132	132	20	6	200	6 : 1	8,000	$	Obsecro.

The price includes a set of front, back, bevel and side gauges.

NIAGARA POWER GAP SHEARS, No. 600 Series.

With 15-Inch Gap.



Cut shows No. 652 Shear.

For Soft Steel and Iron up to 1-8 inch thick.

The open throat or gap at each end of the machine is 15 inches deep, which gives the advantage that these Shears, in addition to cutting and squaring sheets the length of the knives, can be used for trimming sheets of any length and slitting them into strips up to 15 inches wide.

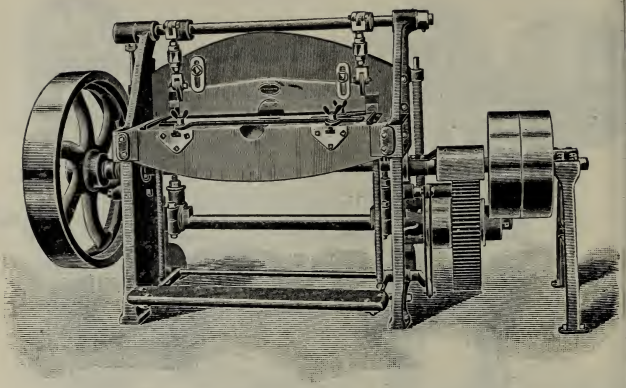
The driving mechanism is overhead and acts directly upon the upper cutter bar. The crank shaft is forged of steel and the gears are machine-cut. T and L pulleys are provided, and the motion is controlled by the Niagara Clutch. The automatic hold-down is operated by cam and lever from the main shaft. It travels ahead of the crosshead to hold the sheet firmly upon the bed.

SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square.	DRIVING PULLEYS.			Proportion of Gearing.	Weight.	Price.	Code Word.
		Diam.	Face.	Speed.				
	Inches.	Inches.	Inches.	Revol.		Lbs.		
630	30	16	5	225	5½ : 1	3,200	$	Obsedant.
636	36	16	5	225	5½ : 1	3,400	$	Obseso.
642	42	16	5	225	5½ : 1	3,600	$	Obsiani.
652	52	16	5	225	5½ : 1	3,900	$	Obsipar.
662	62	18	5	225	6 : 1	4,200	$	Obsitos.
672	72	20	5	225	6 : 1	5,000	$	Obsolido.

The price includes a set of front, back, bevel and side gauges

NIAGARA POWER SQUARING SHEARS, No. 736, &c.



Cut Shows No. 736 Shear

For Iron and Soft Steel up to 3-16 inch thick.

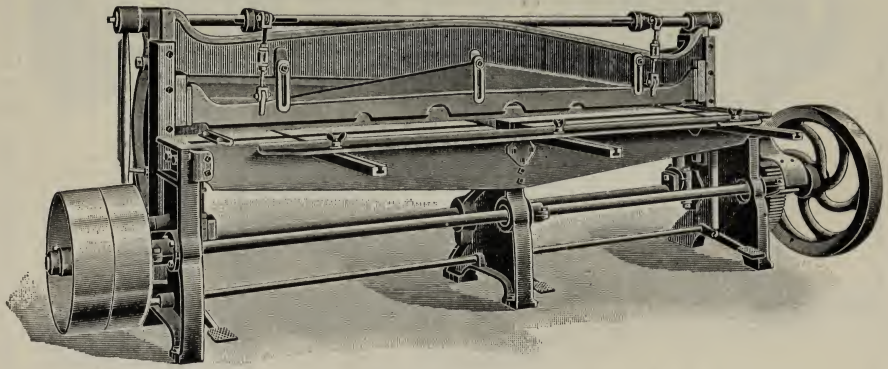
These Shears are made extra strong in all parts, so as to withstand the strain in cutting heavy stock up to the limit mentioned. They are now made self-contained, without the outer bearing for driving shaft

In place of the shaft with eccentrics, used on lighter Power Shears, a double crank shaft of forged steel is used to operate the crosshead. The hold-down works automatically by means of a cam from the main shaft. The gears are machine-cut. T and L pulleys are provided.

SEE GENERAL DESCRIPTION, PAGE 97.

No	Will Cut and Square	Driving Pulleys			Proportion of Gearing	Weight	Price	Code Word
		Diam	Face	Speed				
	inches	Inches	Inches	Revol		Lbs		
736	36	18	5	240	6 : 1	2,800	$	Obsonia.
762	62	20	5	240	6 : 1	4,300	$	Obsonand.

HEAVY NIAGARA POWER SQUARING SHEARS, Nos. 796, &c.



Cut shows No. 7120.

For Iron and Soft Steel 3-16-inch and lighter.

HEAVY NIAGARA POWER SQUARING SHEARS, No. 796, &c.

For Iron and Soft Steel 3-16 inch and lighter.

These Shears have ample strength for doing heavy work continuously, and they can also be recommended to manufacturers who have to do a large range of cutting, from the lightest up to the limit given

The crosshead is operated by means of a heavy double crank shaft of forged steel. A clamping bar guided at both ends and adjustable for varying thicknesses of metal, is placed in front of the crosshead It holds the sheet firmly upon the bed and prevents draw or inaccurate cuts. The gears are machine-cut, and T and L Pulleys, besides the fly-wheel, are provided. The bed has T slots running from front to back and from right to left.

The Niagara Clutch controls the motion It is coupled to the gear wheel in a positive manner, thereby preventing the crosshead from dropping ahead of the wheel on account of its weight. This construction does away with balance weights or undue brake pressure, which are usually employed to counteract this tendency

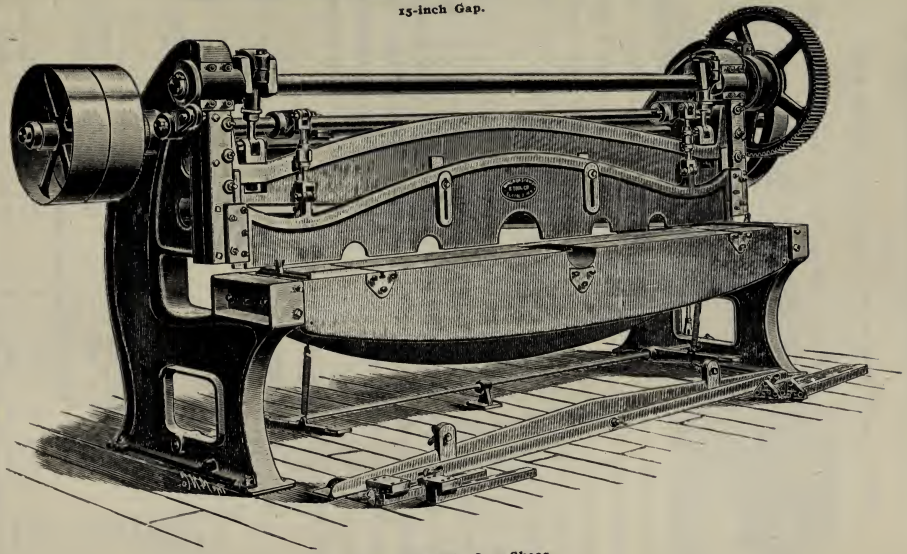
SEE GENERAL DESCRIPTION, PAGE 97.

No.	Will Cut and Square.	Driving Pulleys.			Proportion of Gearing.	Weight	Price.	Code Word
		Diam.	Face.	Speed.				
	Inches	Inches	Inches.	Revol.		Lbs.		
796	96	22	5	260	7 : 1	7,500	$	Obsopio
7120	120	24	6	260	7 : 1	9,000	$	Obsorge.

The price includes the hold-down and a set of front, back bevel and side gauges.

HEAVY NIAGARA POWER GAP SHEARS, Nos. 896, &c.

15-inch Gap.



Cut Shows No. 8120 Shear.

For Iron and Soft Steel up to 3-16-inch thick.

HEAVY NIAGARA POWER GAP SHEARS, Nos. 896, &c.

15-Inch Gap.

For Iron and Soft Sheet Steel up to 3-16 or 1-4-inch thick.

These Shears are adapted to a large range of work. They will cut thin sheets as well as the heavy gauges, within the limits mentioned. The housings have a gap or open throat so that a sheet longer than the knives can be trimmed and split up to 15 inches from the edge by moving it along and taking successive cuts.

In order to obtain direct pressure upon the upper cutting bar, and for other important reasons, the driving mechanism is laid overhead. The heavy crank shaft is forged of steel, the gears are machine-cut, and T and L pulleys are furnished besides the fly-wheel. The automatic hold-down is guided at both ends, and gives a firm grip upon the sheet while being cut. It releases automatically as soon as the cut is completed.

These Shears are provided with our Niagara Clutch, which is of simple construction and great durability. It is coupled to the gear wheel in a positive manner, thereby preventing the crosshead from dropping ahead of the wheel on account of its weight. This construction does away with balance weights or undue brake pressure, which are usually employed to counteract this tendency. A heavy transverse bar connects the two housings and also serves as a support for the driving shaft.

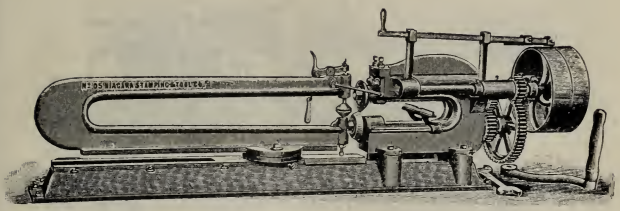
SEE GENERAL DESCRIPTION, PAGE 97.

For 3-16-inch Iron and lighter.

No.	Will Cut and Square.	Driving Pulleys.			Proportion of Gearing.	Weight.	Price.	Code Word.
		Diam.	Face.	Speed.				
	Inches.	Inches.	Inches.	Revol.		Lbs.		
896	96	22	5	260	7 : 1	9,000	$	Obstance.
8120	120	24	6	260	7 : 1	12,000	$	Obstart.
		For 1-4-inch Iron and lighter.						
996	96	26	5	260	8 : 1	13,000	$	Obsterno.
9120	120	26	6	260	8 : 1	16,500	$	Obstes.

The price includes the hold-down and set of gauges.

NIAGARA HAND AND POWER CIRCLE SHEARS.



No. 05—Geared.

For No. 20 Iron and lighter.

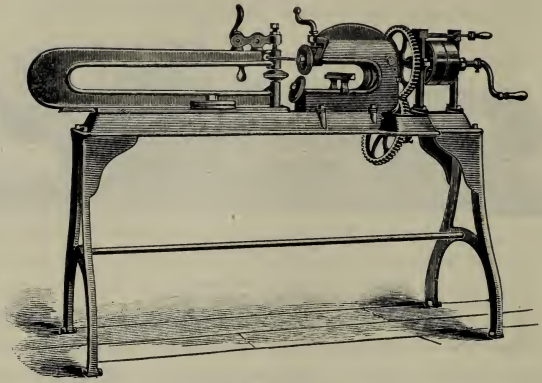
These Shears are intended for cutting round disks of light sheet metal, and they can also be used for cutting the material into strips. They can be operated either by hand or by belt power. The swinging gauge carried by the circle arm serves to bring the material in proper position before starting the cut. The straight gauge in the cutting head is used in cutting strips. The bed is graduated corresponding with the diameter of the circles to be cut.

In place of the old style crank screw, we use an eccentric for the upper clamping disk, which grips the metal instantly, and, once adjusted, will always exert the same pressure upon the metal between the disks.

No.	For Circles in Diameter.	Will Slit.	Will Cut.	Weight.	Price.	Code Word.
	Inches.	Inches.	No.	Lbs.		
02—Not Geared.	From 3 to 20	9	20	200	$	Obstwein.
03 " "	" 3½ " 40	9	20	300	$	Obsum.
04 " "	" 3½ " 48	9	20	350	$	Obtecte.
05 " "	" 4 " 48	12	20	500	$	Obtenido.
05—Geared.	" 4 " 48	12	18	525	$	Obtexta.

NIAGARA RING AND CIRCLE SHEARS.

For Hand and Power.



Cut shows No. 15.

Ring Shears are intended for cutting internal circles, without cutting through the edge of the sheet, and can also be used for the work usually done with ordinary circle shears. They are very useful for cutting armature disks for dynamos and similar work where accuracy is required.

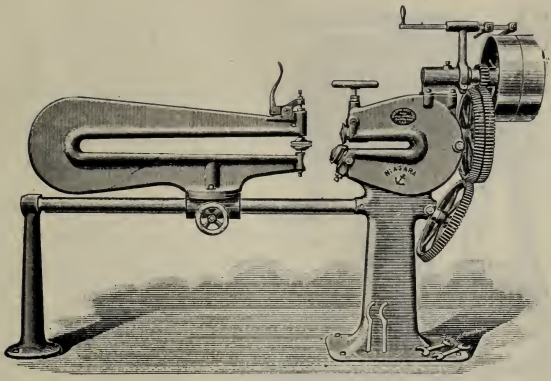
The circle arm carries a swinging gauge to determine the proper position of the material. The bed is graduated corresponding with the diameter of the circles to be cut. A crank is provided for operation by hand, and T and L pulleys for belt power.

Nos. 11 and 13 are fitted for bench use, unless otherwise ordered

No. 15 is furnished with iron legs.

No.	Depth of Cutting Head.	Depth of Arm.	Will Circle.	Will Cut.	Weight.	Price.	Code Word.
	Inches.	Inches.	Inches.		Lbs.		
11	10	11½	3½ to 15	No. 22.	220	$	Obtigit.
13	10	30	3½ " 40	No. 22.	350	$	Obtorta.
15	14½	33	5 " 48	No. 18.	550	$	Obtraho.

NIAGARA RING AND CIRCLE SHEARS, No. 16.

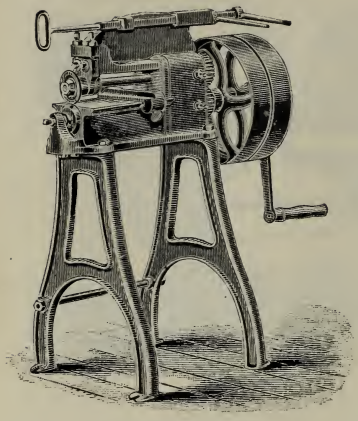


For No. 14 Iron and lighter.

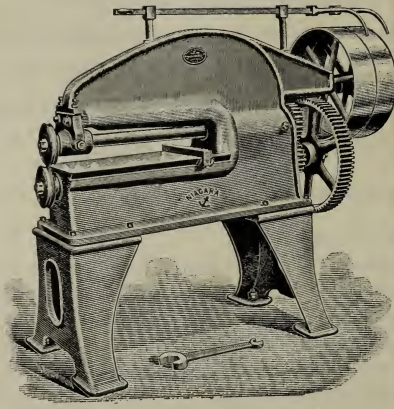
Owing to the position of the lower cutters these Shears are adapted to cutting holes or internal circles, as well as external circles. They cut accurately, and we have furnished a large number of them to manufacturers of dynamos for cutting armature disks. The upper cutter is raised by means of a hand wheel in placing the material in position, and it is lowered to start the cut.

Depth of throat on cutting head	12½ inches.
" " " circle arm	40 "
Will cut circles	6 to 60 "
Diameter of T and L pulleys	16 "
Width " " "	4 "
Proportion of Gearing	4 : 1 "
Speed of pulleys per minute	300 revols.
Weight	1,300 lbs.
Price	$
Code Word	Obtrunco.

NIAGARA ROTARY SLITTING SHEARS.



No. 105—Not Geared.



No. 107—Geared.

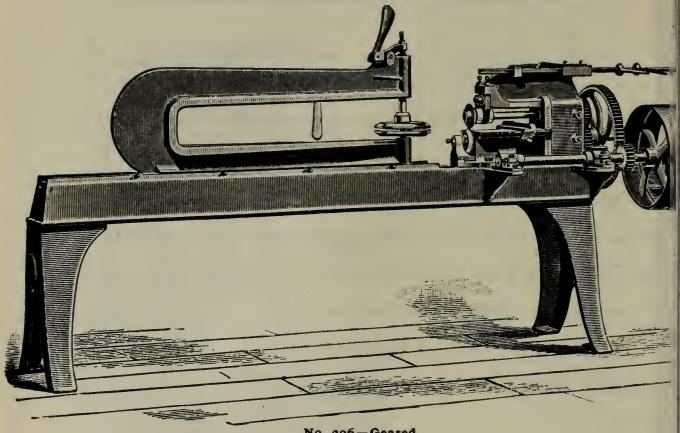
These machines are intended for cutting sheet iron, brass, copper, &c., into strips of any length.

In addition to the pulleys, a crank handle is furnished. There is a planed movable guide in the cutting head that can be set quickly to gauge the width of the strips, the largest widths according to the depth of throat of the machine. The gears are machine-cut.

The cutters are made of high grade steel, ground true and properly hardened. Each cutter has two cutting edges, which can be used alternately.

NUMBER	105.	106.	107.
Will cut, not geared	No. 18	No. 18	No. 18
" " geared	No. 12	No. 12	No. 10
Depth of throat.....inches	12	16	25
Diameter of cutters..... "	4	4	6
" " pulleys..... "	16	16	20
Width of pulleys..... "	4	4	4½
Speed of Pulleys, not geared, per minute.....revs.	75	75	45
" " " geared, per minute..... "	250	250	180
Proportion of gearing.....	4 : 1	4 : 1	4 : 1
Weight, not geared.....lbs.	525	625	1,400
Price, " "	$	$	$
Code Word, not geared.....	Obtuli.	Obtunsis.	Obtuvo.
Weight, geared.....lbs.	600	700	1,500
Price, " "	$	$	$
Code Word, geared.....	Obunco.	Obuser.	Obvallo.

NIAGARA POWER CIRCLE AND SLITTING SHEARS.



No. 206—Geared.

These Shears are adapted to slitting sheets of any length, as well as to cutting circular blanks 10 inches and larger in diameter, limited by the depth of throat.

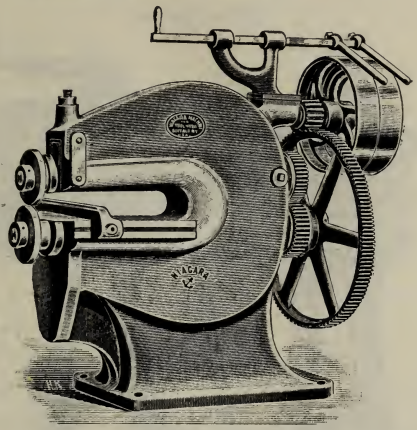
The cutting heads are strong and rigid, and provided with a planed guide that can be readily set for strips of various widths. The bed is heavy and well supported. The clamping plate for holding the sheet is set down instantly by means of an eccentric lever. The bed is graduated to correspond with the diameter of the circles to be cut. The gears are machine-cut.

Any of the three sizes can be furnished with traveling carriage and ways, on which the sheet is clamped while being cut, to insure a straight cut.

A deeper circle arm can be substituted, to special order and at extra cost.

NUMBER	205.	206.	207.
Will cut, not geared	No. 18	No. 18	No. 18
" " geared	No. 12	No. 12	No. 10
Depth of throat of cutting head...inches	12	16	25
" " " circle arm... "	26	38	44
Diameter of cutters... "	4	4	6
" " pulleys... "	16	16	20
Width of pulleys... "	4	4	4 ½
Speed of pulleys, not geared, per minute...revs.	75	75	45
" " " geared, per minute... "	250	250	180
Proportion of gearing	4 : 1	4 : 1	4 : 1
Weight, not geared ...lbs.	1,400	1,600	2,900
Price, " "	$	$	$
Code Word, not geared	Obviar.	Obviolet.	Obvolvo.
Weight, geared ...lbs.	1,500	1,700	3,000
Price, "	$	$	$
Code Word, geared	Obwohl.	Ocaso.	Occasive.
Slitting carriage and ways, extra	$	$	$

NIAGARA ROTARY SHEARS, No. 307.



For Iron and Soft Sheet Steel up to 1-4-inch thick.

These Shears were designed for cutting heavy material. As shown in the illustration, they are intended for slitting sheets of any length, the width limited by the depth of the throat. For cutting circles, an extension is provided to the frame with a circle arm, similar to that of our lighter Circle Shears, in which the sheet is clamped.

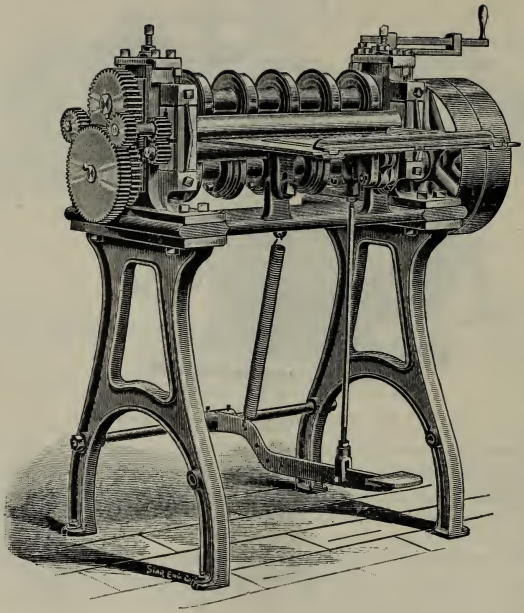
The cutting head is very substantial to allow of cutting stock, up to the limit for which the machine is intended, without undue strain. The shafts are heavy, the gears machine-cut and the cutters are made of special tool steel, carefully hardened and ground.

To insure straight cuts when the Shear is used for slitting, a traveling carriage and ways can be furnished, on which the sheet is clamped while being cut.

Depth of throat of cutting head	24 inches.
" " " " to gauge	20 "
" " circle arm	40 "
Largest circle to be cut from square blank	60 "
Smallest " " " " "	14 "
Weight of Slitting Shear	3,000 lbs.
Price " " "	$
Code Word " "	Occet.
Weight of Circle and Slitting Shear	4,000 lbs.
Price " " " " "	$
Code Word " " " "	Occillo.
Slitting Carriage and Ways (Code Word, Occlure), extra	$

GANG SLITTING MACHINES.

Adjustable Cutters.



For cutting simultaneously a number of straight strips of tin or other light metal, or for any other articles requiring rectangular blanks. The workmanship and finish of these machines is unexcelled. As many pairs of cutters may be placed on the steel shafts as permitted by the size of the blanks to be cut and the thickness of the cutters. The cutters are made of the best steel, ground true and interchangeable, and are held securely on the shafts at any points desired.

The shafts are geared together, as are also the steel feed rolls in front and back of cutters. All the gears are machine-cut. A table with gauge is provided in front of the cutters, and the sheet is fed squarely into the rolls by means of the foot treadle attachment.

At an extra cost, we furnish an attachment with drum and countershaft, whereby the cutters can be ground without being removed from the arbors.

For sheets in width up to	28 inches
Weight, about	1,100 lbs.
Price, including 4 pairs of cutters	$
Code Word	Ochava.
Price of Cutter Grinding Attachment with Drum and Countershaft, extra	$

CLUTCH.

The Niagara Power Presses are provided with a positive clutch which is of simple construction, durable and reliable The working parts are made of high-grade steel and hardened. The clutch can be taken apart and examined by simply sliding the wheel towards the end of the shaft. The fly-wheel is near the bearing of the shaft in the main frame

Slight pressure on the foot treadle is sufficient to engage the clutch, and if the foot is removed from the treadle as soon as the shaft commences to turn the motion will stop automatically when the slide is again at the highest point, while the wheel keeps on revolving. By keeping the treadle depressed the plunger will make continuous strokes There are two or more steel pins in the hub of the wheel, so that not more than one-half of a revolution can be lost in starting after the treadle is depressed.

The parts of many other clutches are held together by means of nuts and screws, and these will work loose through the constant jar resulting from the action of the Press, thereby causing trouble. No screws are used in the construction of our clutch, and the advantage thereof is obvious.

A LOCKING DEVICE is provided which allows the clutch to engage only when the crank is at or near the highest point, thus enabling the operator to set dies while the fly-wheel is in motion. The wheel can be turned backwards to release a punch that may be stuck in the die

To special order, we can make our clutch with a POSITIVE STOP, which prevents the Press from making more than one stroke, so that the treadle must be depressed for each stroke.

A FRICTION BRAKE, which can be easily adjusted, insures stoppage at the highest point when the clutch is released

In workmanship, convenience and durability, these Presses are unsurpassed, and the range of work for which they are suitable is unlimited, including blank cutting, punching, forming and combination dies used in the manufacture of tinware, cans and other articles of sheet metal.

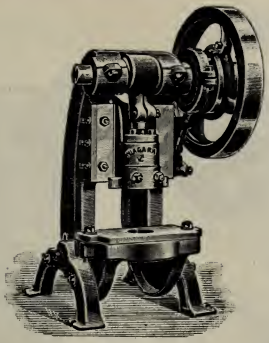
The outlines of our Presses are pleasing, the proportions right and the material properly distributed The shafts are heavy and of forged steel, and all materials are of best quality. The wearing surfaces are large, the slides are long and have wide bearings. The construction of the slide allows the light to fall upon the work and the dies without obstruction. Lugs are cast on the slide to facilitate fastening wide punches. There is a large opening in the lower end of slide in which bushings can be inserted for shanks of punches of various dimensions. The heads of the bolts that fasten the bolster to the bed do not project above the surface of the bolster A treadle lock is provided which enables the operator to lock the treadle down for continuous punching, or to lock it in the upper position in order to prevent accidental depression of the foot treadle

These Presses, with the exception of the No. 7, are easily and quickly adjusted to upright and inclined positions The upright position is required for cutting, edging, punching and perforating where the material drops through the bed of the Press The inclined position is preferable when combination dies are used that cut and form at the same operation. The finished work will slide through the opening in the back of the Press by force of gravity. While the frame is changed from upright to inclined position or *vice versa*, its stability is insured, as the inclining mechanism holds it positively in every position The height of the working surface of the bed in the inclined position is nearly the same as in the upright

AUTOMATIC FEED.— If desired, we apply roller feeds, cam feeds, rack and pinion feeds, etc., to any of our Power Presses, at proper difference in price.

AUTOMATIC KNOCKOUT ATTACHMENT can be applied to the slide of our Presses to discharge the work from the upper die positively at each stroke of the Press This attachment does away with the springs in the dies that are ordinarily used

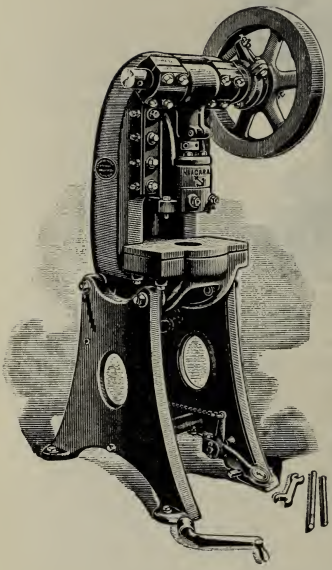
NIAGARA BENCH POWER PRESS, No. 2.



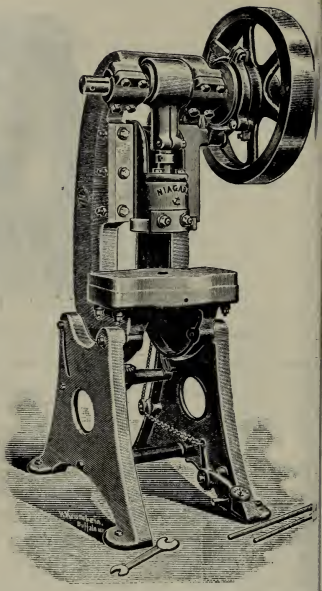
This Press is adjustable to inclined and upright positions, and it is suitable for small cutting, perforating and forming dies, such as cap dies for fruit cans, dies for roofing cleats, brasswork, pail ears, etc.

Opening in bed, rectangular part	4 x 6 inches.
" " circular part	5 "
Distance from centre of slide to back	4 "
" " bed to slide when up	6 "
Width of opening in back of Press	6 "
Stroke of slide, standard	1¼ "
Maximum stroke of slide	2 "
Adjustment of slide	2 "
Diameter of balance wheel	18 "
Width " "	2½ "
Weight " "	100 lbs.
Speed " "	100–125 revol.
Usual hole in slide, square	2 inches.
Diameter of shaft	2 "
Area top of bolster	7 x 11 inches.
Thickness "	¾ "
Space required over all	20 x 20 "
Height to center of shaft	26½ "
Weight of Press, complete	500 lbs.
Price	$
Code Word	Ochtend.

A bolster plate with bolts and wrenches are included in the price.



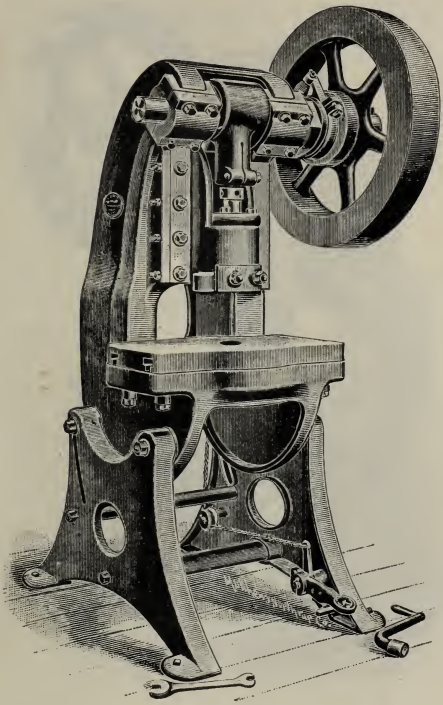
No. 3.



No. 4.

The above illustrations show the No. 3 and No. 4 Niagara Power Presses in upright position. By means of the inclining mechanism, consisting of crank and screw, the position can be changed to inclined while the frame is under perfect control. The working height is nearly the same in both positions.

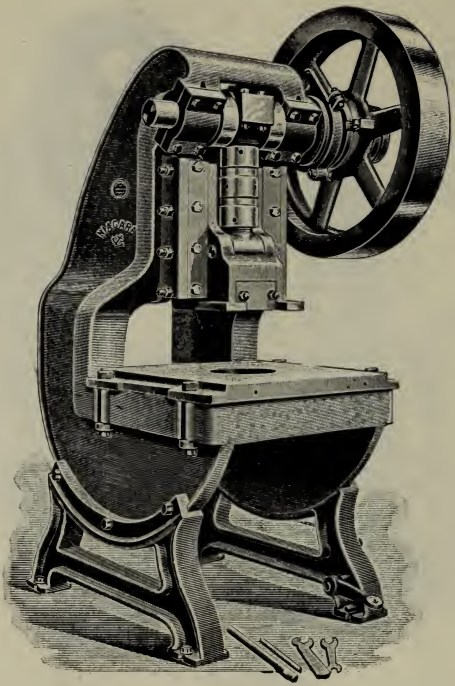
SEE GENERAL DESCRIPTION, PAGE 122; DIMENSIONS, PAGE 127.



No. 5.

The above illustration shows the No. 5 Niagara Power Press in upright position. By means of the inclining mechanism, consisting of crank and screw, the position can be changed to inclined while the frame is under perfect control. The working height is nearly the same in both positions.

SEE GENERAL DESCRIPTION, PAGE 122; DIMENSIONS, PAGE 127.



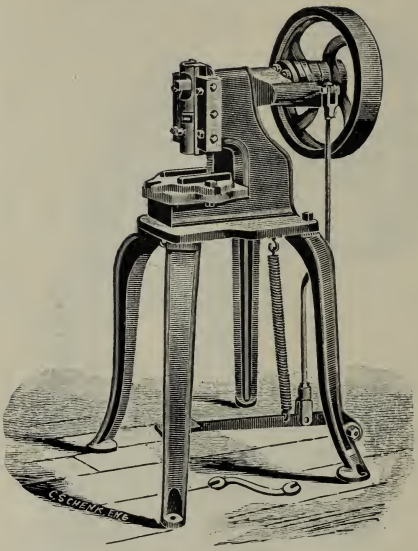
No. 7.

The above illustration shows the No. 7 Niagara Power Press in upright position. On account of its size and weight, it is impracticable to adjust this Press from upright to inclined position, or *vice versa*, without changing the legs. The price includes one set of legs, either upright or inclined. An extra set of legs will be needed should both positions be required.

SEE GENERAL DESCRIPTION, PAGE 122; DIMENSIONS, PAGE 127.

NUMBER	3	4	5	6	7
Opening in bed, rectangular part.....inches	4½ x 8	6 x 10	8 x 12	14 x 14	24 x 25
" " circular part..... "	6	8	10	—	—
Distance from ntre of slide to back..... "	4	5	6	9	15
" " bed to slide, when up, standard stroke..... "	7	8	9	10	11
Width of opening in back of Press..... "	7	8	12	14	20
Stroke of slide, standard..... "	1½	2	2½	3	3
Maximum stroke of slide..... "	2½	2½	3	3½	4
Adjustment of slide..... "	3	3	3	3	3
Diameter of balance wheel..... "	20	25	30	35	40
Width of " " ..... "	3	4	5	6	7
Weight of " " .....lbs.	150	275	500	750	1,100
Speed of " " per minute.....revol.	100–125	100–125	100–125	75–125	75–100
Hole in slide, square.....inches.	2	2	2	2	3
Diameter of shaft..... "	2¼	2½	3	3½	4
Area top of bolster..... "	7½ x 15½	10 x 19	12 x 25	20 x 28	29 x 32
Thickness " ..... "	1¼	1¾	2¼	2½	2½
Floor space over all, upright position, F. to B., R. to L..... "	35 x 26	39 x 30	42 x 34	48 x 40	56 x 48
Height to centre of shaft..... "	55	60	62	63	72
Weight of Press, not geared.....lbs.	900	1,400	2,500	3,500	6,500
Price, " "	$	$	$	$	$
Code Word, " "	Ocnus.	Ocolum.	Ocrane.	Octadem.	Octante.
Price, geared.....	$	$	$	$	$
Code Word, geared.....	Octapla.	Octavage.	Octennis.	Octodon.	Octofore.

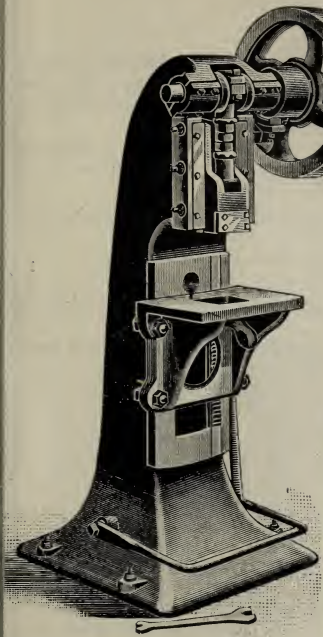
UPRIGHT POWER PRESS, No. 03.



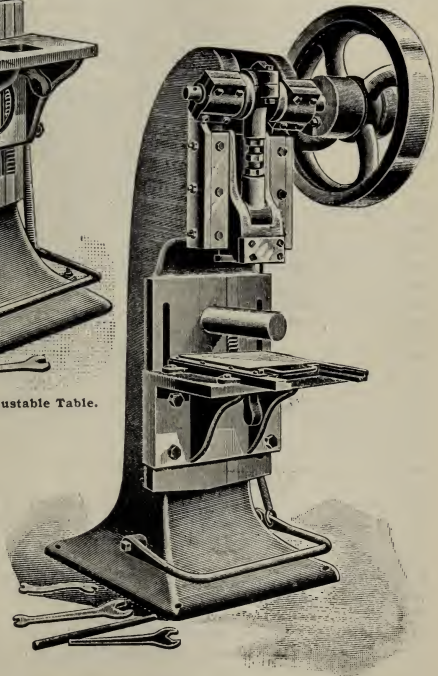
This Press is suitable for operating small cutting and punching dies. The motion is controlled by the Niagara Clutch, described on page 121.

Size of opening in bed	5 x 5 inches.
Distance from centre of slide to back	4 "
" " bed to slide, when up	4 "
Width of opening in back of Press	5 "
Stroke of slide	1 "
Adjustment of slide	¾ "
Diameter of balance wheel	20 "
Width " "	3 "
Weight " "	150 lbs.
Speed " " per minute	100–125 revols.
Usual hole in slide, round	1 inch.
Diameter of shaft	2¼ inches.
Area top of bolster	8 x 8 "
Thickness "	1¼ "
Floor space over all	28 x 20 "
Height to centre of shaft	50 "
Weight of Press, complete	650 lbs.
Price	$
Code Word	Octonos.

NIAGARA POWER PRESSES, Nos. 13 and 14.



No. 13, with Adjustable Table.



No. 14, with Adjustable Table, Horn and Wiring Frame.

NIAGARA POWER PRESSES, Nos. 13 and 14.

Presses Nos. 13 and 14 are especially intended for punching and for closing the locked side seams of round, square, oval and oblong work. The horn is held in an opening at the back of Press. When provided with a sliding table, they are suitable for operating wiring dies.

The adaptability of these Presses for various kinds of work makes them very useful in smaller factories where there is not room enough to use a Press for each operation.

The Improved Niagara Clutch, described on page 121, is provided to control the motion of the Presses.

No. 13 will accommodate wiring dies up to 6 inches diameter.

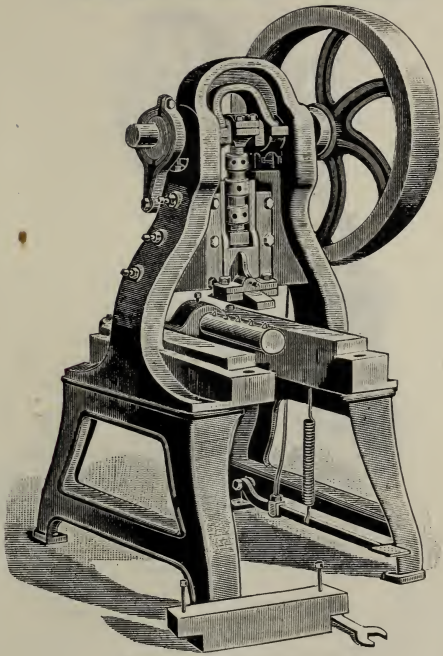
No. 14 will accommodate wiring dies up to 11 inches diameter.

No. 13 will close side seams up to 9 inches long. Diameter of horn, 2½ inches.

No. 14 will close side seams up to 14 inches long. Diameter of horn, 3½ inches.

NUMBER		13	14
Size of opening in table	inches.	4 x 4	7 x 7
Distance from centre of slide to back	"	5	8
Largest distance from table to slide, when up	"	14	16
Stroke of slide	"	1½	2
Maximum stroke of slide	"	2½	2½
Adjustment of slide	"	2	2½
Diameter of balance wheel	"	20	25
Width " "	"	3	4
Weight " "	lbs.	150	275
Speed " " per minute	revols.	100–125	100–125
Usual hole in slide, round	inches.	1½	2
Diameter of shaft	"	2¼	2½
Area top of table	"	10 x 15½	13½ x 19
Floor space over all	"	33 x 30	42 x 34
Height to centre of shaft	"	54	65
Weight of Press, complete	lbs.	1,000	2,000
Price without table, for horning only, front not planed	$		
Code Word, " " " " " " "		Oculosi.	Ocupode.
Price, with fixed table for punching	$		
Code Word, " " " "		Odaria.	Odatrie.
Price, with adjustable table	$		
Code Word, " "		Odiant.	Odimus.
Wiring Frame (Code Word, Odinero), extra	$		
Horn and Force (" " Odioso), extra	$		

Bolster Plate is not furnished with these Presses unless ordered.



No. 26, with Horn and Force.

Presses built after this style are adapted for a large variety of sheet-metal work:

WITH FLAT BOLSTER, for cutting sectional blanks, forming, stamping and lettering.

WITH HORN AND FORCE, for closing side seams of round, square, oval and oblong cans or boxes.

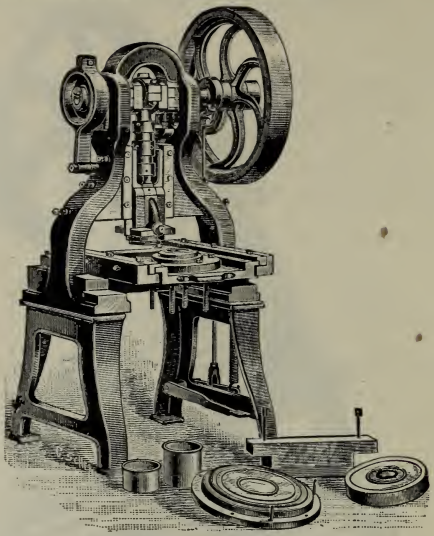
WITH SUNKEN BOLSTER OR WIRING FRAME, for operating wiring dies for coffee-pots, measures, buckets and other similar work. When large and deep work requires to be wired, a wiring frame is fitted to the Press and the dies fitted to slide in it.

No. 26 is suitable for cutting, stamping and lettering (if desired at one operation) the tops and bottoms of petroleum and meat cans, lard pails, powder kegs; cutting stove-pipe elbow sections, frying-pan blanks, sectional tinware; cutting and stamping fire shovels, coal-hod bottoms, etc.

No. 25 will be found serviceable for lighter work of the same character.

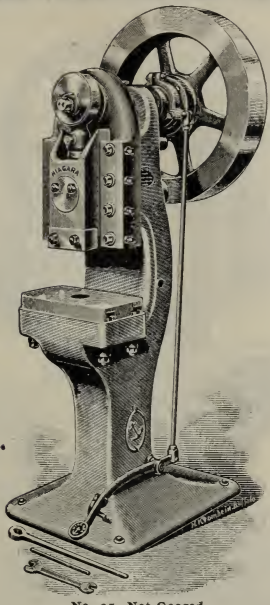
The Improved Niagara Clutch, described on page 121, controls the motion of these Presses. The bed is made with the removable front piece (shown in cut) only if so ordered—otherwise solid.

NIAGARA POWER ARCH PRESSES.



No. 25, with Wiring Frame and Dies.

NUMBER	25	26
Size of opening in bed.....inches.	16 x 22	16 x 22
Width between uprights..... "	28½	30
Distance from bed to slide, when up..... "	10	10
Stroke of slide, standard..... "	2½	3
Maximum stroke of slide..... "	3	4
Adjustment of slide..... "	3	3
Diameter of balance wheel..... "	30	35
Width " " ..... "	5	6
Weight " " .....lbs.	500	750
Speed " " per minute.....revols.	100–125	75–125
Usual hole in slide, round .....inches.	2	3
Diameter of shaft ..... "	3	3½
Area top of bolster .... "	28 x 26	30½ x 26
Thickness " .... "	1½	1½
Floor space, over all..... ..... "	46 x 38	48 x 40
Height to centre of shaft ..... "	66	68
Weight of Press, not geared.....lbs.	3,000	4,200
Price, not geared	$	$
Code Word, not geared.....	Odists.	Odollam.
Price, geared.....	$	$
Code Word, geared.....	Odopete.	Odorable.
Wiring Frame (Code Word, Odorista). extra.....	$	$
Sunken Bolster with Sliding Plate (Code Word, Oelen), extra,	$	$
Horn Bolster (Code Word, Odosome), extra.....	$	$
Horn and Force (Code Word, Odour). extra.....	$	$



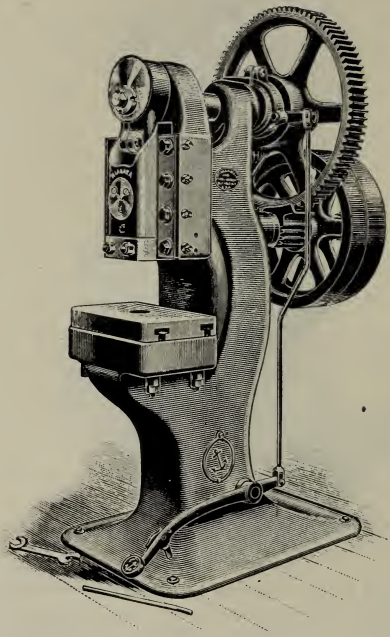
No. 35—Not Geared.

These Punching Presses are adapted to a large variety of heavy work, owing to their design, which combines strength with rigidity and compactness. They are especially suitable for punching and cutting bars and heavy sheet metal; trimming drop forgings; operating, cutting and forming dies required in the manufacture of hardware, cutlery, etc.

These Presses have wide and long wearing surfaces on slide and guides, and adjustment is provided to take up wear. The shafts are made of forged steel and exceptionally heavy. When it is desired to change the stroke of the Press, it can be done by substituting another eccentric and strap. The gears are cut from solid metal. The treadle can be locked in the lower position for continuous punching, or in the upper position to guard against accidents. The motion of our Power Presses is controlled by a positive clutch of simple and durable construction (see page 121).

The bed and size of hole in same can be modified. A bolster plate with bolts and a set of wrenches is included in price,

SEE DIMENSIONS, PAGE 136.

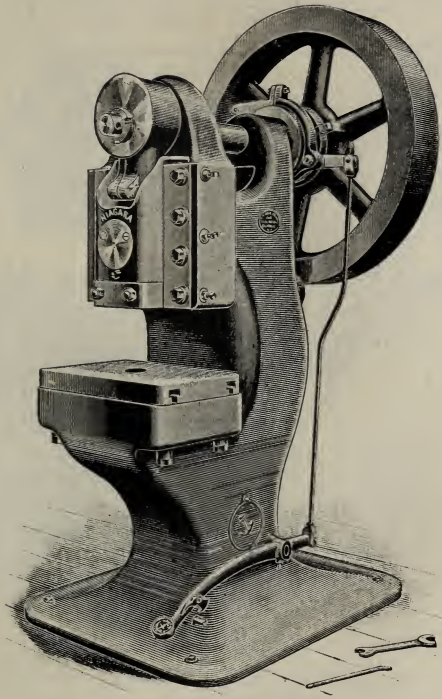


No. 36—Geared.

Capacities of Geared Power Punching Presses.

NUMBER	35	36	37	38	39
	Inches.	Inches.	Inches.	Inches.	Inches.
Will cut off round iron (limited by stroke) about	1	1¼	1½	1½	1½
Will cut flat iron about	⅜ x 4	7/16 x 4	½ x 6	⅝ x 7	¾ x 8
Will punch, with 1-inch round die iron in thickness, about	5/16	7/16	11/16	⅞	1 1/16

SEE DESCRIPTION, PAGE 133; DIMENSIONS, PAGE 136.



No. 37—Not Geared.

Capacities of Power Punching Presses, Not Geared.

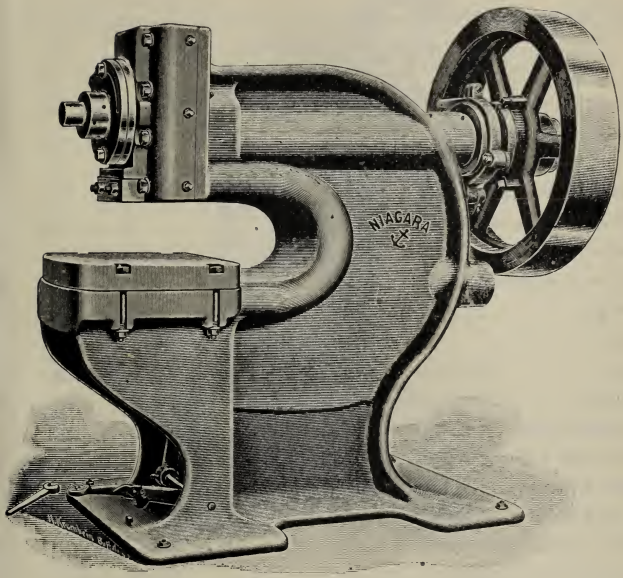
NUMBER	35	36	37	38	39
	Inches.	Inches.	Inches.	Inches.	Inches.
Will cut off round iron (limited by stroke) about	1 1/8	1 1/8	1 3/8	1 1/2	1 1/2
Will cut flat iron about	5/16 x 4	3/8 x 5	7/16 x 6	1/2 x 7	5/8 x 8
Will punch, with 1-inch round die iron in thickness, about	1/4	3/8	5/8	13/16	1

SEE DESCRIPTION, PAGE 133; DIMENSIONS, PAGE 136.

NIAGARA POWER PUNCHING PRESSES.

NUMBER	35	36	37	38	39
Size of opening in bed—can be modified.....inches.	4 x 6	6 x 8	8 x 10	10 x 12	12 x 14
Distance from centre of slide to back ..... "	6	6½	8½	10	12
" " bed to slide, when up..... "	9	9½	10	10½	11
Stroke of slide, standard..... "	1½	1½	1½	1½	1½
Maximum stroke of slide..... "	2½	3	3	3½	4
Adjustment of slide ..... "	3	3	3	3	3
Size of fly-wheel, not geared..... "	30 x 5	35 x 6	40 x 7	45 x 8	50 x 9
Weight " " " .....lbs.	500	750	1,100	1,500	2,000
Speed " " " .....revols.	110	100	90	80	70
Size " and L. pulley, geared.....inches.	20 x 3	25 x 4	30 x 5	35 x 6	40 x 7
Weight " geared .....lbs.	175	275	500	750	1,100
Speed of pulley, geared.....revols	420	360	300	240	180
Proportion of gearing.....	6 : 1	6 : 1	6 : 1	6 : 1	6 : 1
Usual hole in slide, square.....inches.	2	2	3	3	3
Length of shank slide will receive..... "	3	3	3	3	3
Diameter of shaft ..... "	3	3½	4	4½	5
Width of slide between gibs ..... "	7	8	8½	9	10
Area top of bolster..... "	10 x 17	12 x 19½	15 x 23	18 x 27½	22 x 33
Thickness " ..... "	2	2½	3	3½	4
Floor space, not geared, F. to B., R. to L. ..... "	34 x 30	40 x 35	50 x 40	60 x 45	70 x 50
" " geared " " ..... "	42 x 24	50 x 29	62 x 34	72 x 41	82 x 48
Height to centre of shaft ..... "	60½	62	63½	66	69
Weight, not geared.....lbs.	2,000	3,000	4,900	7,000	11,000
Price, " "	$	$	$	$	$
Code Word, not geared.....	Oestlich,	Ofella.	Ofensor.	Ofellam.	Offenheit.
Weight, geared.....lbs.	2,000	3,000	5,000	7,200	11,500
Price, "	$	$	$	$	$
Code Word, geared.....	Offigor.	Offirmo.	Offrande.	Offskip.	Offward.

NIAGARA DEEP THROAT POWER PRESSES.



No. 47.

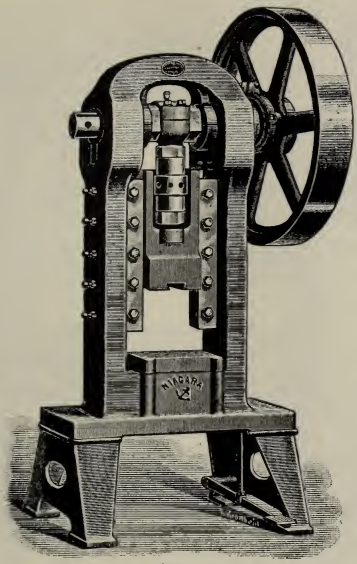
These Presses have an exceptionally deep throat, or distance from slide to back, to make them suitable for punching holes in large sheets far away from the edge, and similar work. They have been found particularly useful in the manufacture of ranges. The frame is cast in one piece with its support.

The slide and its guides are long and have wide wearing surfaces. The slide has 1-inch adjustment to accommodate dies of various heights. The heavy shaft is forged of steel. The opening in bed is extra large, and it can be modified to suit requirements.

The Niagara Press Clutch, which is distinguished through great durability and simple construction, controls the motion. The capacities of the above Presses correspond with those of our Punching Presses Nos 36 and 37, without using tie rods to stiffen the frame.

NIAGARA DEEP THROAT POWER PRESSES.

NUMBER	46	47
Size of opening in bed—can be modified.....inches.	10 x 12	14 x 16
Distance from centre of slide to back..... ..... "	20	22
" " bed to slide, when up. .... "	10	10
Stroke of slide, standard .... "	1½	1½
Maximum stroke of slide..... "	2	2½
Adjustment of slide..... "	1	1
Size of fly-wheel, not geared..... "	35 x 6	40 x 7
Weight " " .....lbs.	750	1,100
Speed " " per minute.....revols.	100	90
Size " and loose pulley, geared.....inches,	25 x 4	30 x 5
Weight " geared.....lbs.	275	500
Speed of pulley, geared, per minute..... .....revols.	360	300
Proportion of gearing.....	6 : 1	6 : 1
Hole in slide, square .....inches.	2	3
Length of shank, slide will receive ..... "	3	3
Floor space over all, not geared, F. to B., R. to L..... "	60 x 35	76 x 40
" " " geared, " " ..... "	68 x 30	86 x 35
Height to centre of shaft..... "	50	52
Weight, not geared.....lbs.	4,000	6,500
Price, " "	$	$
Code Word, not geared.....	Oficio.	Ofira.
Weight, geared .....lbs.	4,000	6,700
Price, "	$	$
Code Word, geared.....	Oftmals.	Ogenos.



No. 57.

These Presses were designed for work requiring accuracy and strength, and they are particularly adapted to trimming drop-forgings, embossing, reducing shells, making bicycle parts and heavy sheet metal work.

The frame is very rigid and the shaft extra heavy. The slides and guides for the same are exceptionally long. The slide connections are made of forged steel and have bronze bushings. The bearings for the shaft have removable bushings, which can be renewed when the shaft is worn down.

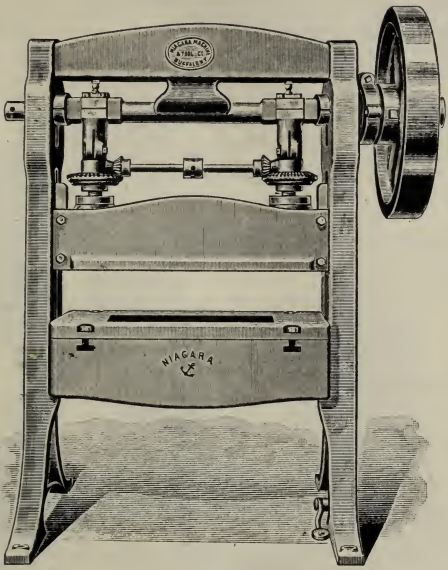
On Presses made with a long stroke, or with powerful springs in the die, we combine a device with the clutch which prevents the back lash of the plunger.

Various means can be provided for fastening punches, *i. e.*, the usual recess with clamp, or a dove-tail, or a flange to which the punch is fastened by means of screws.

NUMBER	56	57
Size of opening in bed—can be modified.....inches.	8 x 8	10 x 10
Distance between uprights..... "	14	18
Distance from bed to slide when up, standard stroke... "	12	13
Stroke of slide, standard..... "	3	3
Maximum stroke of slide..... "	6	8
Adjustment of slide..... "	3	3
Size of fly-wheel, not geared..... "	35 x 6	40 x 7
Weight of " " " .....lbs.	750	1,100
Size of pulley, geared.....inches.	22 x 5	24 x 5
Proportion of gearing.....	6 : 1	6 : 1
Usual hole in slide, round.....inches.	2	3
Weight, not geared.....lbs.	3,500	5,000
Price, " "	$	$
Code Word, not geared.....	Ogival.	Oglia.
Weight, geared.....lbs.	4,000	6,000
Price, "	$	$
Code Word, geared.....	Ognora.	Oheim.

Straight-sided Presses intended for reducing work can be provided with a KNOCK-OUT ATTACHMENT, which lifts the work from the lower die. When intended for heavy punching a CAM-ACTUATED STRIPPER can be applied, which permits of using short punches to insure durability. For trimming drop forgings a SIDE SHEAR ATTACHMENT is usually applied outside of the housings, which serves for cutting the forgings off the bar.

NIAGARA DOUBLE CRANK PRESSES, Nos. 65 and 67.



No. 67.

These Presses are used in cutting out large articles of sheet metal, for punching a number of holes at the same time, operating gang dies and similar work. The construction permits of modifications to suit the nature of the work to be performed.

Sometimes the uprights are made with a gap or open throat, which gives the advantage that short Presses will answer for punching rows of holes along the edges of sheets of any length, at successive operations.

The two pitmans are so connected that both are adjustable up and down simultaneously, enabling the operator to quickly raise and lower the slide to suit the height of dies, while keeping the slide parallel with the bed.

NIAGARA DOUBLE CRANK PRESSES, Nos. 65 and 67.

General Dimensions of Presses No. 65.

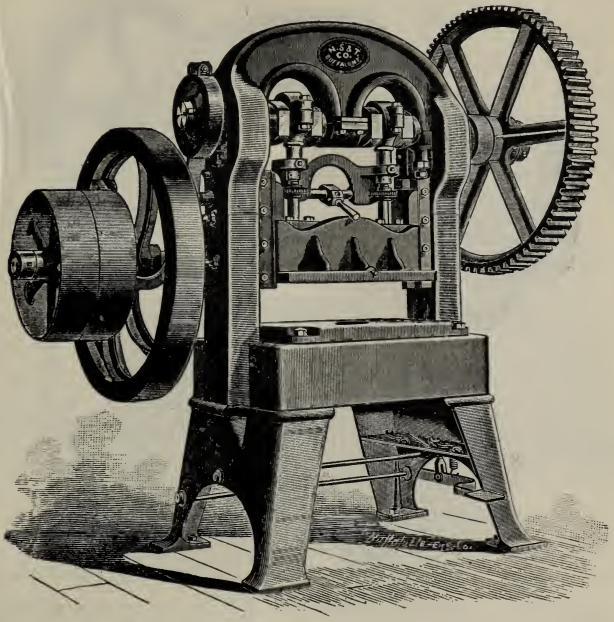
Distance from bed to slide, when up	10 inches.
Adjustment of slide	3 "
Size of balance-wheel, not geared	30 x 5 inches.
Weight " " " "	500 lbs.
Speed " " " "	75 to 100 revol.
Standard stroke of slide	2 inches.
Maximum " "	4 "
Size of pulleys, geared	20 x 5 inches.
Speed " "	300 revol.
Proportion of gearing	6 : 1.

NUMBER	65-A.	65-B.	65-C.	65-D.	65-E.
Width between uprights.....inches.	24	36	48	60	72
Size of opening in bed..... "	10 x 18	12 x 30	14 x 42	14 x 54	14 x 66
Weight, not geared.....lbs.	2,500	3,100	3,700	4,300	5,500
Price, " straight uprights.....	$	$	$	$	$
Code W'd, " " "	Ohren.	Ohrfluss.	Ohrlos.	Ohrsand.	Outrora.
Price, " with 7-inch gap.....	$	$	$	$	$
Code W'd, " " " "	Oigan.	Ojalar.	Ojaleis.	Ovejas	Outman.
Weight, geared.....lbs	2,750	3,350	3,950	4,550	5,750
Price, " straight uprights.....	$	$	$	$	$
Code W'd, " " "	Ojeras.	Ojoso.	Oksaal.	Outing.	Ovadas.
Price, " with 7-inch gap	$	$	$	$	$
Code W'd, " " " "	Okseis.	Olacis.	Olampi.	Oxhoft.	Overhat.

General Dimensions of Presses No. 67.

Distance from bed to slide, when up	12 inches.
Adjustment of slide	3 "
Size of balance-wheel, not geared	40 x 7 inches.
Weight " " " "	1,100 lbs.
Speed " " " "	80 to 90 revol.
Standard stroke of slide	2 inches.
Maximum " "	4 "
Size of pulleys, geared	24 x 5 inches.
Speed " "	240 revol.
Proportion of gearing	6 : 1.

NUMBER	67-A.	67-B.	67-C.	67-D.	67-E.	67-F	67-G
Width between uprights.....inches.	24	36	48	60	72	84	96
Size of opening in bed..... "	10 x 18	12 x 26	14 x 38	18 x 50	22 x 62	24 x 74	26 x 86
Weight, not geared.....lbs.	4,700	5,700	6,700	7,700	9,000	10,400	12,000
Price, " straight uprights	$	$	$	$	$	$	$
Code W'd, " " "	Olaro.	Olbia.	Olebo.	Olefin.	Olglerd.	Oliban.	Olieton.
Price, " with 8-inch gap...	$	$	$	$	$	$	$
Code W'd, " " " " ...	Olifant.	Olimos.	Olinde.	Oliscar.	Olisipo	Olives.	Ollite.
Weight, geared.....lbs.	5,300	6,300	7,300	8,300	9,600	11,000	12,600
Price, " straight uprights.....	$	$	$	$	$	$	$
Code W'd, " " "	Olmedal.	Olmeto.	Olmos.	Olostlo.	Olvidar.	Olympos.	Omaggi.
Price, " with 8-inch gap.....	$	$	$	$	$	$	$
Code W'd, " " " "	Omasum.	Ombilic.	Ombrase.	Ombres.	Omdat.	Omega.	Omilia.



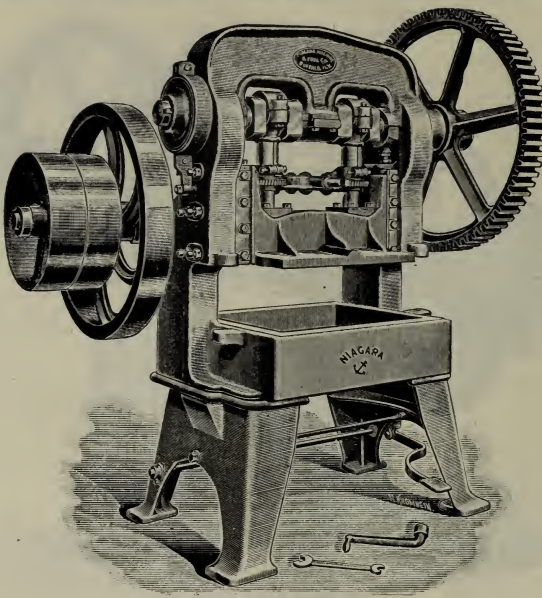
No. 77-A—Geared.

On these Presses the motion of the slide is obtained by a double crank, by which means a uniform pressure upon the work is secured. For operating large cutting and forming dies and gangs of punches, Double Crank Presses are most serviceable, giving a firm support to the die. Both ends of the slide are adjusted up and down at the same time. For this purpose a crank is provided, in place of the ratchet shown in cut. The operator is enabled to adjust the slide to suit the thickness of the die without danger of getting it out of parallel with the bed.

Press No. 78–B is used for embossing ceilings and other raised work of this nature, it being made exceptionally strong in all its parts. These Presses are also adapted for perforating sheet metal.

When these Presses are intended for gang punching, we can make the uprights with a gap, or overhanging (see following page), to permit of punching sheets of any length along the edge.

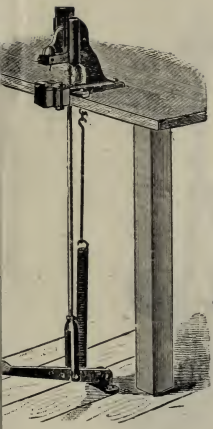
NIAGARA DOUBLE CRANK POWER PRESSES, Nos. 77 and 78.



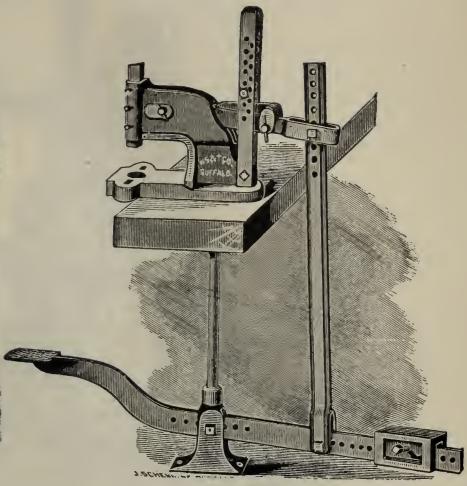
No. 77-B, with Gap—Geared.

NUMBER	77-A	77-B.	78-B.
Size of opening in bed—can be modified.....inches	16 x 28	16 x 36	20 x 27
Width between uprights..... "	36	44	36
Distance from bed to slide, when up..... "	10	10	10
Stroke of slide, standard ..... "	2½	2½	3
Maximum stroke of slide..... "	4	4	4
Adjustment of slide..... "	3	3	3
Size of balance-wheel, not geared..... "	40 x 7	40 x 7	45 x 8
Weight " " " " .....lbs.	1,100	1,100	1,500
Speed " " " " per minute.....revol.	75 to 90	75 to 90	65 to 80
Size " " geared.....inches.	35 x 6	35 x 6	40 x 7
Weight " " " .....lbs	750	750	1,100
Number of strokes per minute, geared.....	40	40	40
Diameter and width of pulleys, geared.....inches.	24 x 5	24 x 6	28 x 6
Proportion of gearing.....	6 : 1	6 : 1	6 : 1
Diameter of shaft.....inches.	4	4	5
Area top of bolster..... "	33 x 27	44 x 27	33 x 30
Thickness " ..... "	2	2	2½
Floor space over all, not geared, R. to L., F. to B.... "	76 x 40	84 x 40	75 x 45
" " " geared " " ..... "	90 x 70	98 x 70	92 x 70
Height to centre of shaft.....	69½	69½	73
Weight, not geared.....lbs.	7,000	8,000	11,000
Price, " "	$	$	$
Code Word, not geared.....	Omsit.	Omkant.	Omnisty.
Weight, geared.....lbs	8,000	9,000	12,500
Price, "	$	$	$
Code Word, geared.....	Omofago.	Omrah.	Omslag.

NIAGARA BENCH PRESSES.



No. 50.



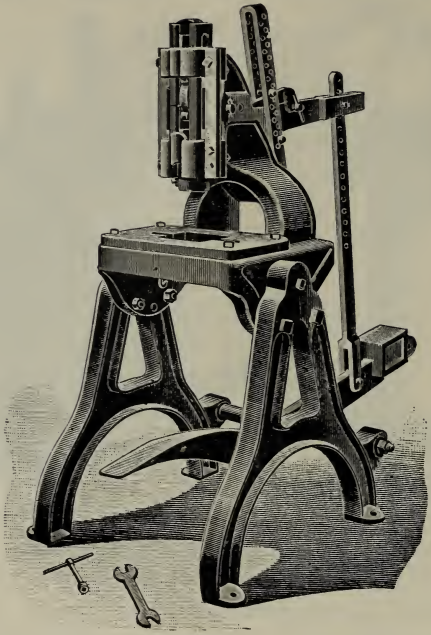
No. 52½.

No. 50 Bench Press is a nice little Press for small work. It has a double V slide and a stop regulates the length of the stroke. Adapted for punching small holes in sheet iron and similar light work.

Nos. 51, 52 and 52½ Bench Presses are particularly adapted to making a variety of small articles of tin and other thin sheet metal, and also for light punching.

NUMBER	50	51	52	52½
Size of opening in bed.....inches.	1 in. round	3 x 3	4 x 7	4 x 7
Distance back from centre of slide..... "	2	2½	4	10
Distance from bed to slide, when up..... "	2	4	4	4
Usual hole in slide, round..... "	⅜	¾	¾	¾
Weight complete.....lbs.	40	125	175	250
Price, with bolster plate.....	$	$	$	$
Code Word.....	Omtrek.	Omzet.	Oncavit.	Oncia.

NIAGARA ADJUSTABLE FOOT PRESSES, Open Back.

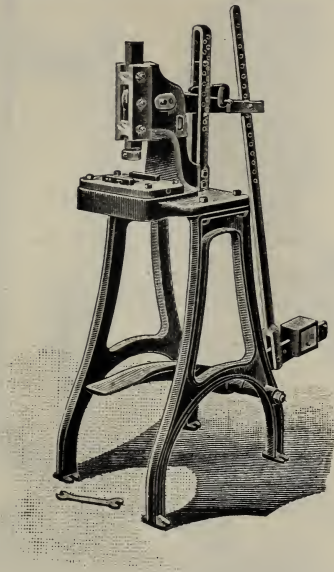


No. 75.

NUMBER		73	74	75
Opening in bed	inches.	5½ x 10	7 x 12	8 x 14
Distance back from centre of slide	"	4	5	6¾
" from bed to slide, when up	"	5	6	6½
Width of opening in back of Press	"	5¾	7½	9½
Usual hole in slide, round	"	1	1¼	1¼
Floor space over all	"	24 x 48	26 x 56	28 x 63
Weight, complete	lbs.	450	600	900
Price		$	$	$
Code Word		Oncome.	Ondetta.	Oneer.

Price includes bolster plate, bolts and wrenches.

NIAGARA UPRIGHT FOOT PRESSES.



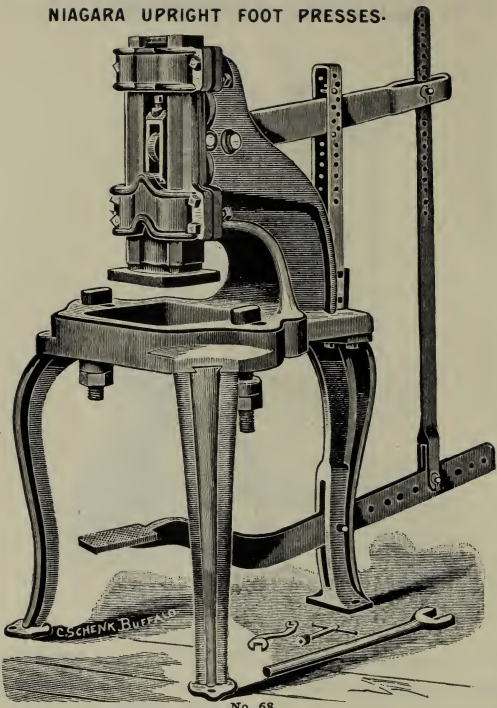
No. 62.

Nos. 61 and 62 are serviceable machines for tin shops, lantern factories, brass goods and button factories, lamp and burner work, and in fact for almost any kind of light punching and similar work.

NUMBER	61	62	62½
Opening in bed.....inches.	3 x 3	4 x 7	4 x 7
Distance back from centre of slide..... "	2½	4	10
" from bed to slide, when up..... "	4	4	4
Usual hole in slide..... "	¾	¾	¾
Floor space over all..... "	16 x 44	16 x 46	16 x 55
Weight, complete.....lbs.	225	275	350
Price.....	$	$	$
Code Word.....	Onnut.	Onosma.	Onset.

Price includes bolster-plate, bolts and wrenches.

NIAGARA UPRIGHT FOOT PRESSES.



No. 68.

Nos. 66 and 67 are adapted for work where a deep and high throat is required.

No. 68 will be found convenient for sectional work and large can bottoms.

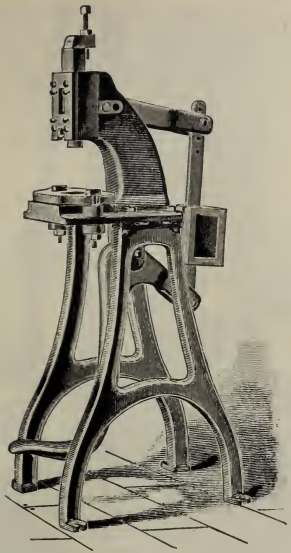
No. 69 is designed for cutting thin sheet-metal blanks of large size, sections of pans, dippers, coffee boilers, square meat-can bodies, stove-pipe elbows, etc. The large opening in bed allows 14 x 20-inch blanks to drop through.

These Presses have a flange on the slide, with four holes, to allow of large punches being screwed to the slide.

NUMBER	66	67	68	69
Opening in bed.....inches.	10 x 10	10½x10½	14 x 16	14 x 21
Distance back from centre of slide..... "	8¾	13	10½	13
" from bed to slide, when up..... "	8	8½	8¾	10
Usual hole in slide..... "	1½	1½	2	2
Weight, complete.....lbs.	1,050	1,100	1,400	1,600
Price.....	$	$	$	$
Code Word	Ontosa.	Onusto.	Onveil.	Onzin.

Price includes bolster-plate, bolts and wrenches.

NIAGARA PENDULUM FOOT PRESSES.



No. 82.

Pendulum Foot Presses are very useful in the manufacture of small brass goods, trimmings, jewelry, etc.

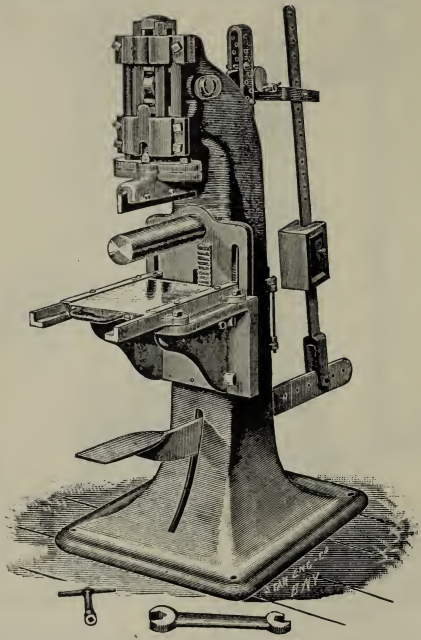
These Presses have heavy and strong heads and levers. The slide is of ▲ shape and scraped to a fit. The cap of the slide has cap-screws to tighten it, and set-screws to push it off the head for accurate adjustment.

The motion of the slide is regulated by a steel set-screw with lock-nut on the top of the slide.

NUMBER		80	82
Opening in bed	inches.	3 x 3	5 x 5
Distance back from centre of slide	"	3½	4¾
" from bed to bottom of slide	"	5	5
Motion of slide	"	2	2
Hole in slide, with set-screw	"	¾	1
Floor space over all	"	14 x 30	16 x 36
Weight	lbs.	200	400
Price		$	$
Code Word		Opatre.	Opdoen.

Price includes bolster-plate, bolts and wrenches.

NIAGARA UPRIGHT FOOT PRESS, No. 95.



This Press is adapted to a large variety of work, such as punching, closing side seams on round, square, oblong or oval work, operating wiring dies, etc. It has a four V slide. The bed is adjustable up and down to receive dies varying in height.

To accommodate wiring dies the table is made with a movable slide. The Press will take wiring dies up to 7 inches in diameter by 10 inches high.

For closing side seams, horn and force are supplied. The horn is 3 inches in diameter, 12 inches long, and fastened in a hole at the back of Press by means of a set-screw.

Opening in bed	6½ x 6½ inches.
Distance back from centre of slide	6½ "
Distance from bed to slide, when up	5½ to 13½ "
Maximum stroke of slide	2 "
Floor space over all	25 x 40 "
Weight, complete	975 lbs.
Price, without table, front not planed, (Code Word, Operula)	$
" with fixed table, (Code Word, Optern)	$
" with adjustable table, (Code Word, Opgang)	$
Wiring Frame (Code Word, Opekort), extra	$
Horn and Force (Code Word, Opgaves), extra	$

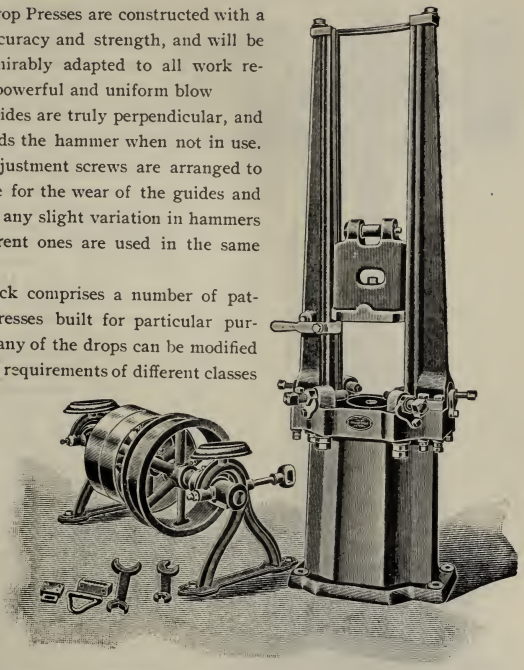
NIAGARA POPPET DROP PRESSES.

Our Drop Presses are constructed with a view to accuracy and strength, and will be found admirably adapted to all work requiring a powerful and uniform blow

The guides are truly perpendicular, and a latch holds the hammer when not in use.

The adjustment screws are arranged to compensate for the wear of the guides and to regulate any slight variation in hammers when different ones are used in the same drop.

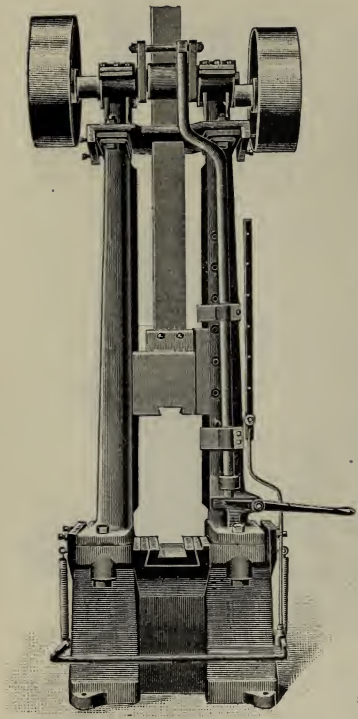
Our stock comprises a number of patterns of Presses built for particular purposes, and any of the drops can be modified to meet the requirements of different classes of work.



SIZE	8	10	12	16	18
Weight of bed.....lbs.	700	1,000	1,700	2,000	4,000
" " hammer..... "	70	100	175	225	400
" complete..... "	900	1,400	2,300	2,800	5,000
Length of guides.....inches.	60	60	60	60	60
Width between guides..... "	8	10	12	16	18
Price.....	$	$	$	$	$
Code Word.....	Opinant.	Opinavel.	Opium.	Oplaag.	Opondra.
Drive and flange pulleys and countershaft (Code Word, Oppicas), extra...	$	$	$	$	$

Price of Automatic Drop Lifters on application.

AUTOMATIC DROP FORGE HAMMER.



This Hammer will meet the demand for a first-class Power Drop Hammer for forge work, etc. It is of simple construction and very efficient. The base and uprights are extra heavy, and they are connected by means of long, heavy bolts passing through the cast iron, with a head on one end and double nut on the other, thereby avoiding tapped holes in cast iron.

The Hammer is raised by friction rolls acting on the board attached to the Hammer. These friction rolls are driven by open and crossed belts, thus avoiding objectionable gearing.

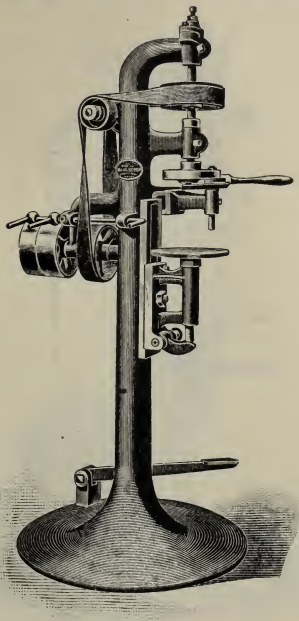
When at rest, the Hammer is held by a catch lever. Pressure on the foot treadle releases the catch from the Hammer and permits it to fall While descending, the Hammer causes the drop rod to fall, thereby pressing the front friction roller towards the back roller. The board becomes firmly gripped between the rollers, and is carried upwards with the Hammer When the Hammer has reached its predetermined upper position, the friction rollers are released automatically, and the Hammer is held suspended.

If the treadle is kept depressed, the Hammer will strike repeated blows from a given height.

The several positions from which the Hammer may fall are fixed, and the catch lever may be adjusted to any position desired. This arrangement has been found superior to any kind of a frictional device for suspending the Hammer

Length of uprights	90 inches
Width between uprights	14 "
Size of anvil base	28 x 42 inches.
Height of anvil	29 inches
" to top of pulley	142 "
Width of lifter, including pulleys	50 "
Size of pulleys	24 x 6 inches.
Weight of hammer	500 lbs
" " anvil	5,200 "
" complete	8,600 "
Price	$
Code Word	Opploro.

NIAGARA POWER DOUBLE SEAMERS.

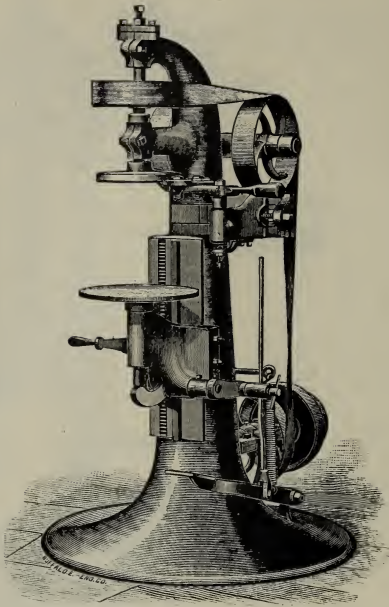


No. 2.

These machines are intended for double seaming the tops and bottoms of round articles of tin and sheet iron, either straight or flaring. With them the ware can be more rapidly and perfectly double-seamed, by unskilled labor, than by any other method. The tops and bottoms to be double-seamed with these machines must be stamped with a depression near the edge for the chuck

The frame of our Double Seamers is cast in one piece with the base (except No. 1) The base is made of extra large diameter, so as to cover sufficient floor space to overcome any vibration caused by unstable floors. The driving shaft is held in bearings cast to the frame, making the machine complete in itself. The main spindle is fitted in split bearings in the frame to allow of taking up wear. Stops are provided to limit the motion of the lever that carries the seaming rolls.

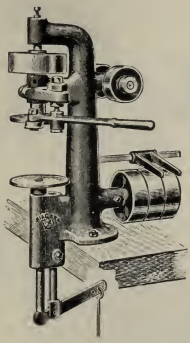
On Seamers No. 3 and No. 4 the adjustment to length of the article is accomplished by means of a rack on the frame and a pinion in the movable table.



No. 4.

NUMBER	1	2	3	4
For work in diameter not more than.....inches.	6	9	15	20
" " height " " ..... "	6	10	16	27
Speed per minute..... .....revols.	350	350	350	300
Floor space.....inches.	20 x 24	30 x 36	40 x 40	48 x 40
Weight, about.....lbs.	350	400	700	1,200
Price, including T and L pulleys and bottom plate, not including chuck.....	$	$	$	$
Code Word.....	Ovelha.	Opril.	Oprollen.	Optar.
Step cone pulley and countershaft (Code Word, Opterig), extra.....	$	$	$	$

UPRIGHT CRIMPERS.

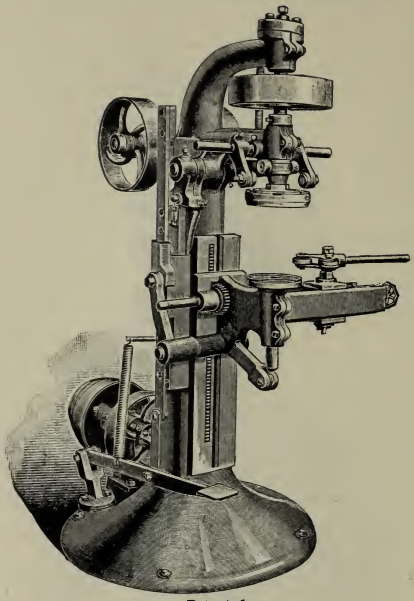


These machines are for crimping the bottoms and tops of round cans, one end at a time, and are especially adapted for crimping on the tops of filled cans. A pair of disks is required for each size of can, and the can bottoms must be slightly recessed.

To special order, these machines can be arranged for double seaming cans.

NUMBER	1	2
Will receive cans in length ..... inches.	6	9
" " " " diameter..... "	6	9
Weight ..... lbs.	150	225
Price, not including chuck.....	$	$
Code Word.....	Opuli.	Orache

NIAGARA DOUBLE SEAMING AND WIRING MACHINE.



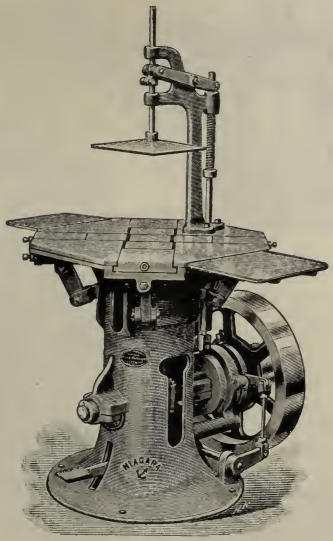
Patented.

This machine was designed for putting an imitation wire on the bodies of pails, buckets, etc., and double seaming the bottoms at the same time. The bottom and body are put on the lower seaming chuck, and by depressing the foot treadle they are raised to the proper position in relation to the upper clamping chuck, while the latter expands and grips the body firmly Further pressure on the foot treadle brings the upper end of the body in contact with the curling rolls which produce the wire. While the pail is in this position the operator double seams the bottoms in the usual way by means of the swinging lever carrying two wheels. When the pressure on the treadle is released the clamping chuck contracts automatically and allows the pail to descend with the lower chuck

As many as 400 bodies have been wired and double seamed in an hour by means of this machine. For each size extra clamping and seaming chucks are needed. The size of the wire can be varied by using proper curling rolls, and the wire can be put toward the inside or the outside of the bodies.

Inquiries should state the diameter and height of the work.

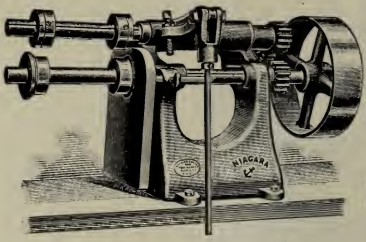
NIAGARA SQUEEZING MACHINES.



These machines are constructed for crimping or squeezing on the tops and bottoms of square, oblong, hexagon, oval and other shaped cans. We are making them either for foot or belt power: No. 2 for work up to 9½ inches square, No. 1 for work up to 6 x 6 inches.

The can ends must be pressed to the proper shape by means of dies.

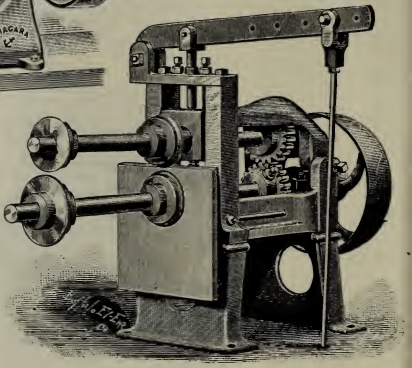
Dimensions	No. 1. Foot.	No. 2.	
		Foot.	Power.
Diameter of balance-wheel.....inches			25
Width " " " ..... "			4
Weight " " " .....lbs.			250
Speed " " " per minute.....revols.			70
Weight, about.....lbs.	450	1,000	1,400
Price, without squeezing jaws and centre plate....	$	$	$
Code Word.....	Outgive.	Orafo.	Orasus.



No. 10.

These machines are intended for crimping the bottoms on to straight cans, pails, etc. With faces to suit, they can be used for a variety of other work, such as beading, mouthing, flanging preparatory to double seaming, and two or more of these operations can be performed simultaneously.

With SWIVEL APRON GAUGE these machines are suitable for flaring articles. The swivel gauge can be set at various angles, and is provided with adjustable guide rollers.



No. 20.

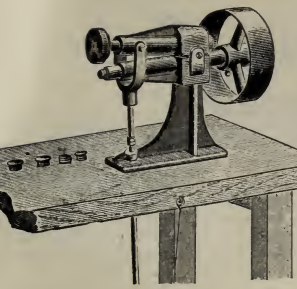
With CROOKED SHAFT the Power Crimpers will answer for crimping on both ends of cans. The top is seamed first, then the crooked shaft is passed through the opening in same to crimp the bottom.

No. 10 is adapted for work up to 7 inches long

No. 20 will answer for longer and heavier work.

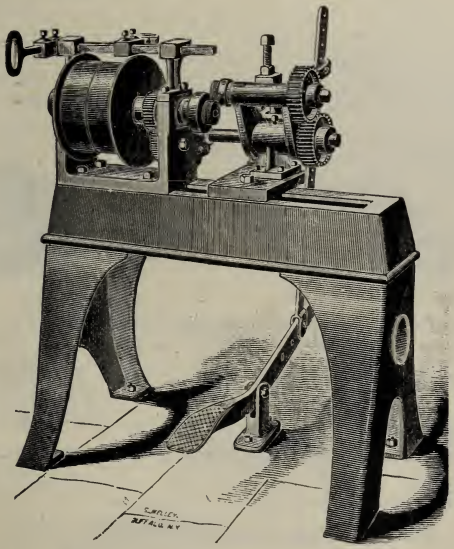
NUMBER	10	20
Diameter of pulley.....inches	8	12
Width " " ..... "	2¼	3
Speed " " .....A.... revols.	250	200
Weight.....lbs.	125	275
Price, with straight or crooked shaft, for straight cans only, including 1 pair of rolls.....	$	$
Code Word.....	Orangite.	Orugol.
Swivel Apron, for tapering work (Code Word, Oratrix), extra...	$	$

Can be furnished on iron pedestal, at extra cost.



Bench Screw Machine.—This is a handy machine for pressing the thread on zinc, brass or tin screws for fruit jars, petroleum can caps, etc. Can be turned by hand, if desired. It can be made to thread from 1 to 3 inches in diameter. The gearing is encased, and the shafts are of steel. A pair of screw chucks is required for each diameter and thread, and one pair is included in the price.

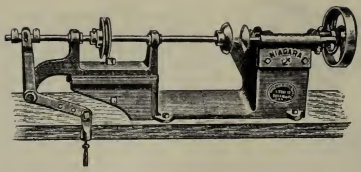
Bench Screw Machines, with 1 pair chucks..... $



No. 2 Screw Machine.—This machine can be used for pressing screws from 1 to 8 inches in diameter. A pair of chucks is needed for each size, and one pair is included in the price of the machine. It has tight and loose pulleys, machine-cut gearing, steel shafts and planer-true bed.

No. 2 Screw Machine, with T and L pulleys and 1 set of chucks; weight, 600 lbs.

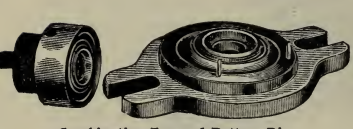
NIAGARA POWER TRIMMER.



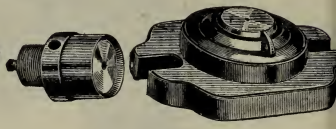
This machine was designed for trimming the edges of round covers and other drawn work left uneven by the dies. It has the advantage that the scrap which is trimmed off will drop down and does not require to be removed by the operator, which is an objection against other Trimmers. Both cutters, as well as the chuck which holds the work, are power driven. An extra chuck is required for each diameter and style of work.

Will trim in diameter	2¾ to 15 inches.
" " " depth up to	5 inches.
Diameter of T and L pulleys on countershaft	10 "
Face of T and L pulleys on countershaft	3 "
Speed of countershaft, per minute	120 revols.
Weight, about	300 lbs.
Price, including countershaft, no chuck	$
Code Word	Osbaduro.

FRUIT CAN DIES.



Combination Top and Bottom Die.



Cap Die.

Our Fruit Can Dies have their own bolster plate. The best steel is used. Usually the female die is tempered, while the male die is not hardened, to allow redressing

SIZES	1 LB.	2 LBS.	2½ LBS.	3 LBS.	2 QTS.	1 GAL.
Diameter.....inches.	3	3½	4	4¼	5	6¼
Bottom Combination Die.....	$23.00	$25.00	$27.00	$29.00	$32.00	$37.00
Combination Top and Bottom Die, with removable Center Ring.....	33.00	35.00	37.00	39.00	42.00	47.00
Cap Die	14.00	14 00	14.00	14.00	14.00	14 00
Hole and Bead Die	14.00	14.00	14.00	14.00	14.00	14.00

WAX OR CEMENT TOP COMBINATION DIES.

SIZES.	1 QT. OR 3 LBS.	2 QTS.	1 GAL.
Diameter.....inches.	4¼	5	6¼
Combination Top Die.....	$45.00	$55.00	$65.00
" Cap Die.....	22.00	24.00	26.00
" Bottom Die.....	29.00	32.00	37.00

CUP WIPINGS.

For holding the wiping rag.

Each..... 25 cents.

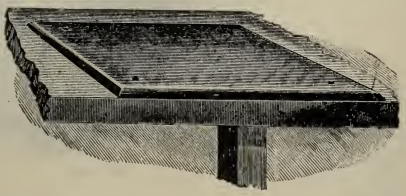
CAN SWAGES.

For contracting the bodies of cans when top or bottom will not go on. Each Swage has two sizes.

	1 and 2 lb.	2 and 3 lb.	2½ and 3 lb.	3 lb. and ½ gal.	3 lb. and 1 gal.	½ and 1 gal.
Each.....	50c.	75c.	$1.00	$1.15	$1.25	$1.50

FLOATING PLATES.

They are accurately planed on the top surface, and have four screw holes for fastening to the work bench. The cans are placed on them while being soldered on the inside.



Size..... 15 × 20 inches.
Price..... $1.50

SOLDERING COPPERS.

Side Seaming or Hatchet Copper.

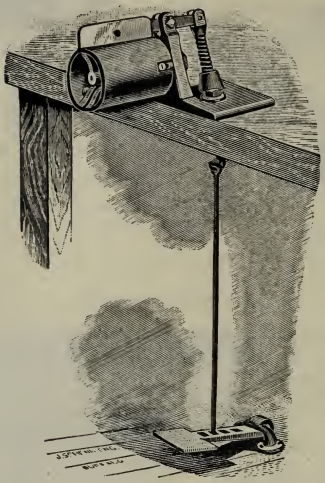
Tipping Copper.

Floating Copper.

Capping Copper.

Tipping Coppers, per lb..... $
Floating " " ..... $
Capping " " ..... $
Side Seaming or Hatchet Coppers, per lb..... $

NIAGARA SOLDERING FRAMES AND CYLINDERS.



Patented.

For gauging and holding the side seams of bodies while being soldered.

The frames are so constructed that the resin does not clog the spring. We furnish them with an iron knife, treadle and rod.

Our Cylinders have a screw adjusting device (patented) instead of the usual wedge expander, whereby the Cylinder can be set accurately and positively, allowing a small variation in size.

Patent Soak Seam Cylinders.

These embody the good qualities of both the iron and wooden cylinders. The improvement consists in grooving the cylinder on the place where the soldering is done, and inserting a sheet metal slide into the groove, so that the Cylinder is hollow on this spot. This allows the can to soak well without heating the Cylinder.

Soldering Frame and Treadle for Cylinders including 1 gallon size..... $2.50
" " " " " " for larger work..... 3.50

	1 lb.	2 lb.	2½ lb.	3 lb.	½ gal.	1 gal.
Niagara Soldering Cylinders, each...	$1.75	$2.00	$2.25	$2.50	$3.25	$4.00
Soak Seam " " "	2.00	2.25	2.50	2.75	2.50	4.50

For square, oval, oblong, or taper cylinders, special prices.

Capping Steel.

NIAGARA CAPPING STEELS.

These Steels are extensively used for soldering the caps after the cans are filled. Stick solder is used in the ordinary manner. Send sample top or cap with order.

Capping Steels for caps up to 1½ inch diameter...each	$2.50
" " " " " 2¼ " " "	3.00
" " " " " 3¼ " " "	4.00

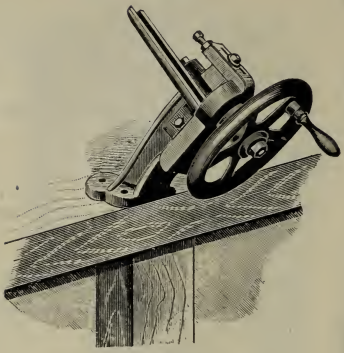
Steels for larger caps at special prices.

NIAGARA CAPPING-IRON HOLDER.

This holder is used with a copper bit, which is charged for extra. The centre rod holds down the cap, and the drops of solder which are used are cut from triangular bars.

Price $1.50

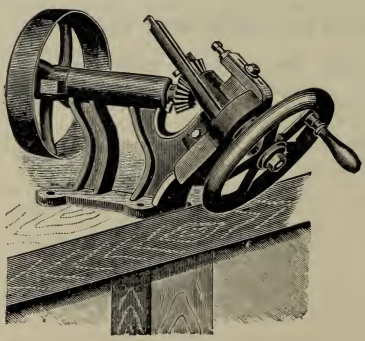
Capping Iron Holder.



For Hand.

The bars of solder are placed on the inclined slide and drop down to the knife. The size of drop is varied from $\frac{3}{16}$ to $\frac{3}{4}$ inch in length by loosening the screw on the cap and turning the adjusting screw. These cutters produce equal drops.

	Code Word.	Price.
Rotary Solder Cutter, for hand	Ostraco.	$15.00
" " " for power	Oswin.	20.00



For Power.

NIAGARA AIR PUMPS.

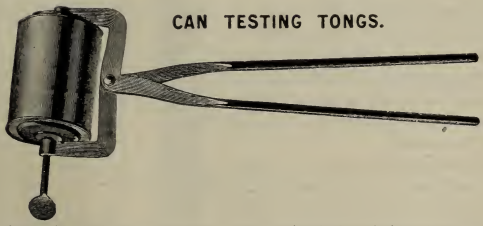
Our Air Pump is designed for use by hand or power. It will produce a pressure of not to exceed 40 lbs. per square inch.

Stroke of piston	6 ins.
Diameter of piston	2½ "
Speed of pulleys per minute	60 revs.
Price, with pulleys and fly-wheel (Code Word, Otanto)	$35.00
Price, without pulleys (Code Word, Otgiva)	$30.00

LIFTING TONGS.

For handling Fruit Cans when hot.
Per dozen..... $3.00

CAN TESTING TONGS.



Used for testing fruit and other cans. The testing is done before the cans are filled. The can is placed between the tongs with the rubber packing ring closing the top of the can. When the can is dipped into hot water the air will expand and escape in case there is a leak, which is indicated by bubbles rising in the water.

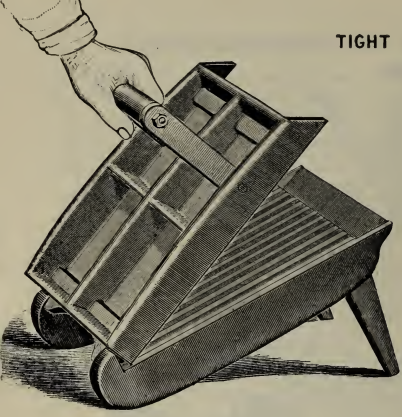
These tongs are made in four sizes, and each is adjustable for the next shorter size of can. Each tong can be supplied with any or all sizes of heads.

	1 lb.	2 lb.	3 lb.	1 gal.
Price of Tongs without head	$1.25	$1.40	$1.50	$2.00

The rubber ring on the tong head fits on the flat surface of the can top outside of the groove for cap.

Tong Heads, with rubber rings, inside diam., inches	1½	2½	3½	4½
Price	$1.25	$1.35	$1.50	$1.75

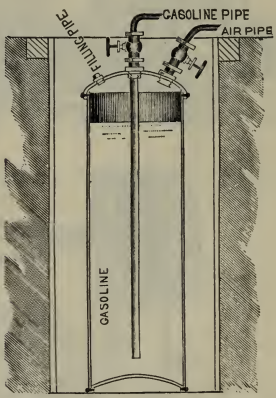
TIGHT GATE SOLDER MOULDS.



Our Moulds fill very readily, and have no clamps to open or close. They are usually planed for ⅜-inch triangular bars, but can be fitted for other sizes and shapes, if specially ordered.

NUMBER	5	6	7	8
No. of Bars	12	18	12	18
Length..ins.	12	12	18	18
Price	$18.00	$22.00	$22.00	$25.00
Code Word	Othila.	Otior.	Otonos	Otorgo.

GASOLINE AND AIR TANKS.



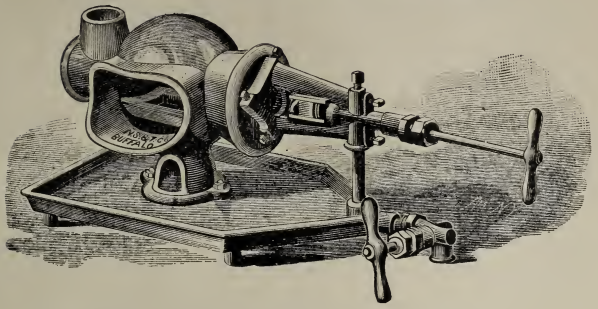
Our Gasoline Tanks are tested by hydraulic pressure to 150 pounds per square inch. The heads are of steel, and provided with three nipples for making connections.

These Tanks should be placed into a hole dug in the ground and lined with wood. The connections should be made as shown in the sketch. We can supply a tap with faucet and hose for emptying gasoline barrels into the tank without exposing the gasoline, thus preventing all danger of explosions.

If the Gasoline Tank is taken large enough a separate Air Tank is not required—*i. e.*, if a 62-gallon Tank is used for a barrel of gasoline (52 gallons) there is sufficient space left in the Tank to act as an Air Tank. This is simpler and cheaper than an additional Air Tank.

SIZE.	PRICE.	CODE WORD
No. 3 Gasoline and Air Tank, 52 gallons, for ½ bbl. oil.....	$31.00	Oudoms.
" 4 " " " 62 " " 1 " "	38.00	Oulema.
" 5 " " " 82 " " 1½ " "	45.50	Ouphen.
" 6 " " " 120 " " 2 " "	74.00	Ourdir.
Fittings, Cocks, etc., for connecting pipes, extra.....	6.00	Outava.
Filling Cocks and connections, with 5 feet of ¾-inch rubber hose for emptying gasoline into tank, extra.....	6.00	Outblow.

NIAGARA GASOLINE FIRE-POTS AND BURNERS.



This Burner will make a hotter flame, will last longer, and is more economical than any other burner

The Fire-Pot is screwed to a metal pan, which also carries the regulating valve and stand-pipe for the burner.

The needle cannot possibly enlarge the discharge opening, no matter how tightly the needle bar may be screwed into the burner. The latter can be readily cleaned by removing the plugs. These plugs have flat heads, so that any screw-wrench will take hold of them. The valves are packed with asbestos.

No. 1.	Complete Fire-Pot with Burner and Angle Valve, for heating Coppers, (Code Word, Outbrag)	$ 8.50
" 2.	Complete Fire-Pot with Burner and Angle Valve, for heating Coppers and Capping Steels (Code Word, Outbribe)	9.00
" 3.	Complete Fire-Pot and Burner and Angle Valve, with double hole for two can makers (Code Word, Outburn)	10.00
" 1.	Fire-Pot and Pan	2 00
" 2.	" " "	2.50
" 3.	" " "	3.50
Horizontal Burner for Niagara Fire-Pot		4.50
Upright Burner for McDonald and other Floaters		5.50
Angle Valve, with coupling		2.00
Drills for drilling out Burner		.50

Our Burner will fit the Fire-Pots of other makers and our Fire-Pots other Burners, with one or two exceptions.

OIL VALVE.

We make a special valve for oil-pipe, tight against gasoline under any pressure.

Oil Valve for ¼-inch iron pipe		$1.25
" " " ⅜ " " "		1.50
" " " ½ " " "		2.00

NIAGARA GASOLINE APPARATUS.

For Heating Soldering Coppers with Gasoline and other Hydro-Carbon Oils.

The tank is located outside of the factory, and 50 feet away from it if possible. A pit should be dug for it and lined with wood, the pit to be large enough for a man to stand in when the tank is in place. The tank should always be kept under water. A hose coupling is used to connect the barrel containing the fuel with the tank, and the liquid is transferred without being exposed to the atmosphere, thus avoiding any possibility of igniting the oil. Air pressure is created in the gasoline tank by means of an air pump, set up in the factory, and connected with the top of the tank by a ¼ or ⅜-inch pipe. The air pressure is not for the purpose of supplying the oil with air for combustion, but it is simply the means of forcing the liquid from the tank into the factory to the burners, and should be about 40 pounds by the gauge. No more air is needed than is necessary to make up for the liquid consumed. An oil supply pipe leads from the tank to the burners, a ¼-inch pipe being sufficient for 12 and a ⅜-inch pipe for 30 burners. This oil supply pipe should be so arranged that it gradually rises from the tank to the burners, and there should never be a fall in it or any of its branches. This is an essential point, because, in case of an accident, the pipes can be run empty as long as there is an uninterrupted fall towards the tank.

Directions for Niagara Gasoline Burners.

Care should be taken that the pipes have been thoroughly washed out. After the burner is screwed down, the needle valve in the burner should be opened, and the supply valve on the pan turned on to allow the oil to enter the burner. As soon as oil escapes through the small opening shut both valves. Then open upper needle valve slightly and ignite the escaping oil, regulating the escape so that a brisk flame is kept up in the burner to heat the same. Soon the oil will be heated and converted into gas, which will be indicated by the blue color of the flame. When well heated turn on the oil supply by means of the lower valve. Do this gradually.

When through with work, shut the lower supply valve. Care should be taken that the burners are kept clean.

In case the burner does not give enough heat, the fault will be found in the needle orifice being too small. To enlarge it we furnish needle-opening reamers, but these should be used very carefully lest the opening be made too large. If too large, we furnish a set to close the same. To ream the hole larger, remove the needle bar and stuffing box, insert reamer and give it one or two turns. A trifle will be found sufficient. Be careful to remove brass chips before inserting the needle bar. To make the opening smaller, use the set by placing it upon the opening, and strike it lightly a few blows with a hammer. Insert needle bar and try burner. If now too small, use reamer carefully, as heretofore described.

INDEX.

EQUIVALENTS OF AMERICAN AND METRIC MEASURES.

INCHES.	MILLIMETERS.	INCHES.	MILLIMETERS.	FEET.	METERS.
1/16	1.59	1	25.4	1	0.305
1/8	3.17	2	50.8	2	0.610
3/16	4.76	3	76.2	3	0.915
1/4	6.35	4	101.6	4	1.220
5/16	7.94	5	127.0	5	1.525
3/8	9.52	6	152.4	6	1.830
7/16	11.11	7	177.8	7	2.135
1/2	12.70	8	203.2	8	2.440
9/16	14.29	9	228.6	9	2.745
5/8	15.87	10	254.0	10	3.050
11/16	17.46	11	279.4	11	3.355
3/4	19.05	12	304.8	12	3.660
13/16	20.64	1 foot			
7/8	22.22				
15/16	23.81				

1 Lb.= 0.45 Kilogr. 1 Kilogr.= 2.2 Lbs.

The Gauge Numbers given in this Catalogue are English Standard. (B. W. G.)

THE FOLLOWING ARE METRIC EQUIVALENTS.

NO.	MILLIMETERS.	NO.	MILLIMETERS.
0	8.64	16	1.65
1	7.62	17	1.47
2	7.21	18	1.24
3	6.58	19	1.07
4	5.94	20	.89
5	5.58	21	.81
6	5.16	22	.71
7	4.57	23	.69
8	4.19	24	.58
9	3.76	25	.51
10	3.40	26	.46
11	3.05	27	.41
12	2.77	28	.36
13	2.41	29	.33
14	2.10	30	.30
15	1.83		